



———— KOSSUTH COUNTY ———— HAZARD MITIGATION PLAN 2024



Plan developed for Kossuth County
by JEO Consulting Group

Hazard Mitigation Planning Team

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Community Profiles

- City of Algona
- City of Bancroft
- City of Burt
- City of Fenton
- City of Lakota
- City of Ledyard
- City of Lone Rock
- City of Lu Verne
- City of Swea City
- City of Titonka
- City of Wesley
- City of Whittemore
- Algona Community School District
- North Kossuth Community School District

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List of Acronyms

ACS – American Community Survey
BRIC – Building Resilient Infrastructure and Communities
CDC – Centers for Disease Control and Prevention
CEP – Comprehensive Emergency Plan
CF – Cubic Feet
CFR – Code of Federal Regulations
COVID-19 – Coronavirus Disease 2019
CRS – Community Rating System
CWPP – Community Wildfire Protection Plans
CyanoHABs – Cyanobacterial Harmful Algae Blooms
DMA 2000 – Disaster Mitigation Act of 2000
EAB – Emerald Ash Borer
EAP – Emergency Action Plan
EMA – Emergency Management Agency
EPA – Environmental Protection Agency
ESL – English as Second Language
FBI – Federal Bureau of Investigation
FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Map
FMA – Flood Mitigation Assistance Program
FR – FEMA's Final Rule
GIS – Geographic Information Systems
HMA – Hazard Mitigation Assistance
HMGP – Hazard Mitigation Grant Program
HMP – Hazard Mitigation Plan
HPSA – Health Professional Shortage Areas
HPRCC – High Plains Regional Climate Center
HRSA – Health Resources and Services Administration
HSEMD – Iowa Department of Homeland Security and Emergency Management
IDALS – Iowa Department of Agriculture & Land Stewardship

IDNR – Iowa Department of Natural Resources
JEO – JEO Consulting Group, Inc.
LGA – Liquid Gallons
MUA – Medically Underserved Areas
MUP – Medically Underserved Populations
NCEI – National Centers for Environmental Information
NDMC – National Drought Mitigation Center
NFIP – National Flood Insurance Program
NOAA – National Oceanic and Atmospheric Administration
NPI – Nonpharmaceutical Interventions
NRC – National Response Center
NWS – National Weather Service
PDSI – Palmer Drought Severity Index
PHMSA – U.S. Pipeline and Hazardous Material Safety Administration
PPE – Personal Protective Equipment
Risk MAP – Risk Mapping, Assessment, and Planning
RMA – Risk Management Agency
SBA – Small Business Administration
SPIA – Sperry-Piltz Ice Accumulation Index
START – National Consortium for the Study of Terrorism and Responses to Terrorism
TORRO – Tornado and Storm Research Organization
USACE – United States Army Corps of Engineers
USDA – United States Department of Agriculture
USGS – United States Geological Survey
WHO – World Health Organization
WUI – Wildland Urban Interface

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Executive Summary

Introduction

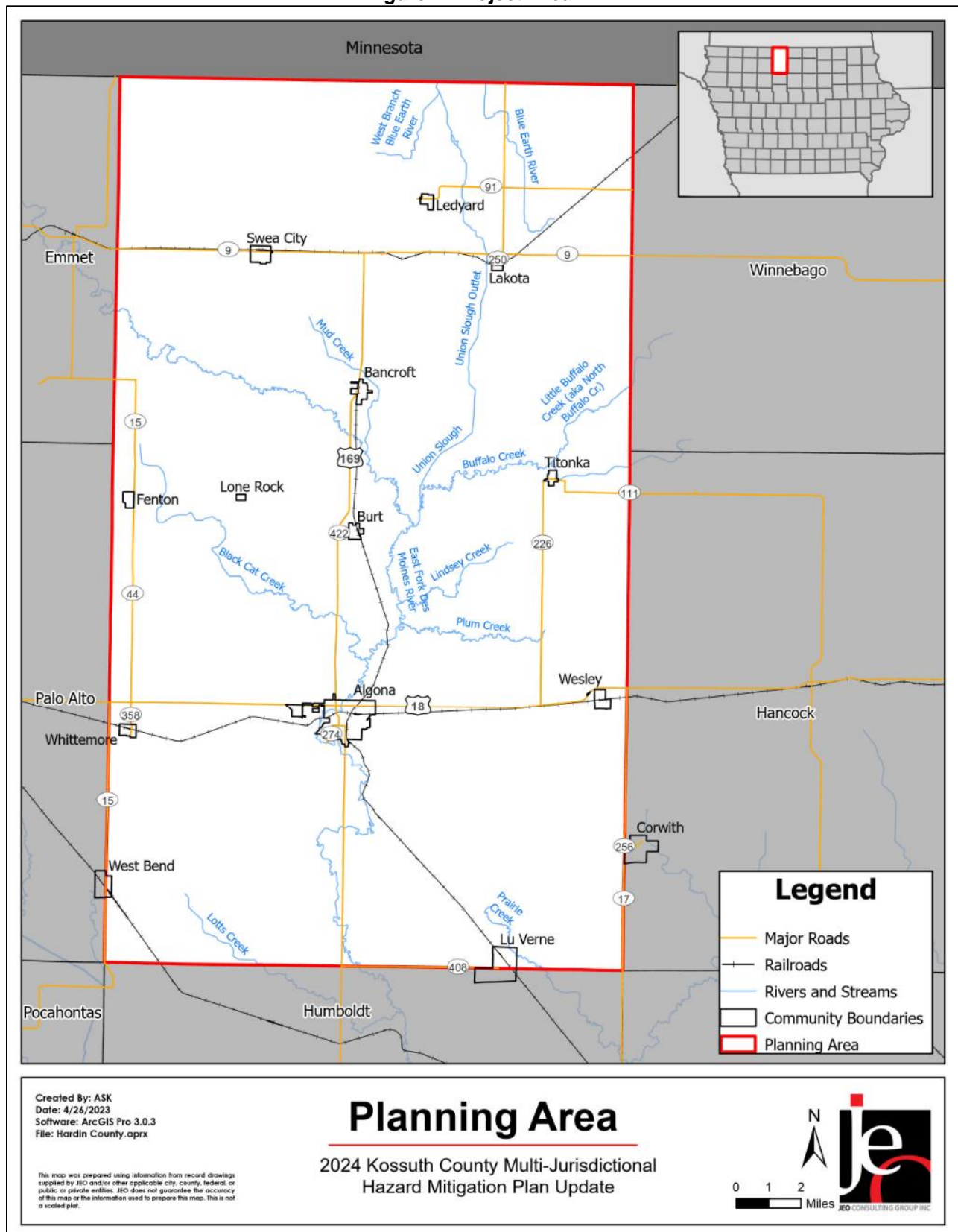
This plan is an update to the Kossuth County Hazard Mitigation Plan (HMP) approved in 2019. The plan update was developed in compliance with the requirements of the Disaster Mitigation Act of 2000 (DMA 2000).

Hazard mitigation planning is a process in which hazards are identified and profiled; people and facilities at-risk are identified and assessed for threats and potential vulnerabilities; and strategies and mitigation measures are identified. Hazard mitigation planning increases the ability of communities to effectively function in the face of natural and human-caused disasters. The goal of the process is to reduce risk and vulnerability, in order to lessen impacts to life, the economy, and infrastructure. Plan participants are listed in the following table and illustrated in the following planning area map (Figure 1).

Table 1: Participating Jurisdictions

Participating Jurisdictions	
Kossuth County	City of Lu Verne
City of Algona	City of Swea City
City of Bancroft	City of Titonka
City of Burt	City of Wesley
City of Fenton	City of Whittemore
City of Lakota	Algona Community School District
City of Ledyard	North Kossuth Community School District
City of Lone Rock	

Figure 1: Project Area



Goals

The potential for disaster losses and the probability of occurrence of natural and human-caused hazards present a significant concern for the jurisdictions participating in this plan. The driving motivation behind this hazard mitigation plan is to reduce vulnerability and the likelihood of impacts to the health, safety, and welfare of all citizens in the planning area. To this end, the Hazard Mitigation Planning Team reviewed and approved goals which helped guide the process of identifying both broad-based and community-specific mitigation strategies and projects that will, if implemented, reduce their vulnerability and help build stronger, more resilient communities.

Goals from the 2019 HMP were reviewed, and the Hazard Mitigation Planning Team agreed that they are still relevant and applicable for this plan update. Jurisdictions that participated in this plan update agreed that the goals identified in 2019 would be carried forward and utilized for the 2024 plan, with one addition. A fifth goal would be added: “Develop or improve planning, ordinances, and building codes to increase capabilities, procedures, and resiliency across Kossuth County”. The goals for this plan update are as follows:

Goal 1: Minimize the vulnerability of the people and their property in Kossuth County to the impacts of hazards.

Goal 2: Protect critical facilities, infrastructure and other community assets from the impacts of hazards.

Goal 3: Improve education and awareness regarding hazards and risk in Kossuth County.

Goal 4: Strengthen communication regarding hazard mitigation among agencies and between agencies and the public.

Goal 5: Develop or improve planning, ordinances, and building codes to increase capabilities, procedures, and resiliency across Kossuth County.

Summary of Changes

The hazard mitigation planning process undergoes several changes during each plan update to best accommodate the planning area and specific conditions. Changes from the 2019 Hazard Mitigation Plan and planning process in this update include the addition of Plan Maintenance sections to individual community profiles, and a combined risk assessment for hazards with similar risks, impacts and mitigation strategies. These include:

- **Extreme Temperatures** (now includes extreme cold),
- **Flooding** (includes flash flooding and riverine flooding),
- **Hazardous Materials Release** (includes HAZMAT incident and pipeline transportation incident)
- **Terrorism and Civil Unrest** (now includes cyber-attack and civil unrest)

This update also works to unify the various planning mechanisms in place throughout the participating communities (i.e., comprehensive plans, local emergency operation plans, zoning ordinances, building codes, etc.) to ensure that the goals and objectives identified in those planning mechanisms are consistent with the strategies and projects included in this plan. Additional changes and a summary of the planning process are described in *Section Two: Planning Process*.

Plan Implementation

Various communities across the planning area have implemented hazard mitigation and strategic projects following the 2019 Hazard Mitigation Plan. A few examples of completed projects include floodplain regulation updates, warning sirens, wastewater system improvements, heating/cooling centers, and safe rooms. To build upon these prior successes and continue implementation of mitigation and strategic projects, despite limited resources, communities will need to continue relying upon multi-agency coordination as a means of leveraging resources. Communities across the region have been able to work with a range of entities to complete projects; potential partners for future project implementation include but are not limited to: Iowa Department of Homeland Security and Emergency Management (HSEMD), Iowa Department of Transportation (IDOT), Iowa Department of Natural Resources (IDNR), United States Department of Agriculture (USDA), and United States Army Corps of Engineers (USACE).

Hazard Profiles

The hazard mitigation plan includes a description of the hazards considered, including a risk and vulnerability assessment. Data considered during the risk assessment process included: historic occurrences and recurrence intervals; historic losses (physical and monetary); impacts to the built environment (including privately-owned structures as well as community lifelines); and the local risk assessment. The following tables provide an overview of the risk assessment for each hazard and the losses associated with each hazard. See *Section Four: Risk Assessment* for further discussion of counts, probabilities, and likely extent.

Table 2: Regional Risk Assessment

Hazard	Previous Occurrences	Approximate Annual Probability*	Likely Extent
Animal and Plant Disease	Animal Disease: 1	N/A	Unknown
	Plant Disease: 16	Plant Disease 12/23 = 52%	Crop damage or loss
Dam Failure	0	Less than 1%	Varies by structure
Drought	423/1,540 months	27%	D1-D4
Earthquake	0	Less than 1%	Less than 5.0 on the Richter Scale
Extreme Temperatures	Cold: Avg 9 days/year	85/130 = 65%	Max Temp $\leq 10^{\circ}\text{F}$
	Heat: Avg 1 day/year	24/130 = 18%	Max Temp $\geq 100^{\circ}\text{F}$
Flooding	81	18/27 = 67%	Some inundation of structures. Some evacuations of people may be necessary.
Grass/Wildfire	22	5/15 = 33%	Avg 6 acres Some homes and structures threatened or at risk
Hazardous Materials Release	Fixed Site Spill: 7	6/33 = 18%	Avg Liquid Spill: 6 gal. Avg Gas Spill: 29 lbs.
	Transportation Spill: 8	7/53 = 13%	Avg Liquid Spill: 305 gal. Avg Gas Spill: 41 gas cu. ft.
Human Infectious Diseases	4,384 Covid cases	N/A	N/A
Infrastructure Failure	Unknown	Unknown	Varies by event
Severe Thunderstorms	325	27/27 = 100%	>1" rainfall Avg 65 mph winds
Severe Winter Storms	109	27/27 = 100%	1-16" snow 10-60 mph winds
Terrorism and Civil Unrest	0	Less than 1%	Varies by event
Tornado and Windstorm	Tornadoes: 14	8/27 = 30%	Mode: EF0 Range: EF0-EF2
	Windstorms: 47	23/27 = 85%	Avg: 56 mph Range 40-70 mph

Hazard	Previous Occurrences	Approximate Annual Probability*	Likely Extent
Transportation Incident	Auto: 1,566	11/11 = 100%	Damages incurred to vehicles involved and traffic delays; substantial damages to aircrafts involved with some aircrafts destroyed
	Aviation: 24	20/62 = 32%	
	Rail: 36	24/48 = 50%	

* Annual Probability = Total Years with an Event Occurrence / Total Years of Record

The following table provides loss estimates for hazards with sufficient data. Description of major events are included in *Section Seven: Community Profiles*.

Table 3: Hazard Loss Estimates for the Planning Area

Hazard Type		Count	Property	Crop ¹
Animal and Plant Disease	Animal Disease ¹⁵	1	N/A	N/A
	Plant Disease ¹	16	N/A	\$55,979
Dam Failure²		0	-	N/A
Drought^{3,6}		423/1,540 months	\$12,650,000	\$29,485,242
Earthquake⁴		0	-	-
Extreme Temperatures⁵	Cold (Max Temp ≤10°F)	Avg 9 days per year	N/A	\$12,905
	Heat (Max Temp ≥100°F)	Avg 1 day per year	N/A	\$674,569
Flooding⁶	Flash Flood	22	\$1,280,000	\$207,267
	Flood	59	\$3,709,500	
Grass and Wildland Fire⁷		22	125 acres	N/A
Hazardous Materials Release	Fixed Site ⁸	7	\$0	N/A
	Transportation ⁹	8	\$421,171	N/A
Human Infectious Diseases¹⁴ <i>101 deaths (Covid)</i>		4,384 Covid cases	N/A	N/A
Infrastructure Failure		Unknown	N/A	N/A
Severe Thunderstorms⁶	Hail	145	\$617,000	\$92,341,400
	Heavy Rain	47	\$0	
	Lightning	3	\$14,000	
	Thunderstorm Wind	130	\$3,062,000	
Severe Winter Storms⁶	Blizzard	36	\$575,000	\$1,923,836
	Heavy Snow	21	\$389,545	
	Ice Storm	14	\$226,280	
	Winter Storm	37	\$590,900	
	Winter Weather	1	\$0	
Terrorism and Civil Unrest¹⁰		0	-	N/A

Hazard Type		Count	Property	Crop ¹
Tornado and Windstorm⁶	Tornadoes: Mode: EF0 Range: EF0-EF2	14	\$1,393,000	\$32,815
	Windstorms: Average: 56 mph Range: 40-70 mph	47	\$1,660,740	\$4,335,102
Transportation Incident	Auto ¹¹ 414 injuries, 18 deaths	1,566	\$17,087,284	N/A
	Aviation ¹² 5 injuries, 5 deaths	24	N/A	N/A
	Rail ¹³ 16 injuries, 4 deaths	36	\$346,980	N/A
Total		2,256	\$31,373,400	\$129,069,114

N/A: Data not available

1 USDA RMA, 2000 - 2022

2 IDNR Communication, 2023

3 NOAA, 1895 - March 2023

4 USGS, 1900 - May 2023

5 NOAA Regional Climate Center, 1939 - 2022

6 NCEI, 1996 - 2022

7 IDNR, 2008 - 2023

8 NRC, 1990 - 2022

9 PHMSA 1971 - April 2023

10 University of Maryland, 1970 - 2018

11 IDOT, 2013 - April 2023

12 NTSB, 1962 - May 2023

13 FRA, 1975 - 2022

14 The New York Times, as of 3/23/2023

15 IDALS, 2022

Events like severe thunderstorms, severe winter storms, and transportation incidents will occur annually. Other hazards like dam failure, earthquakes, and terrorism/civil unrest will occur less often. The scope of events and how they will manifest themselves locally is not known regarding hazard occurrences. Historically, drought, flooding, severe thunderstorms, severe winter storms, tornadoes/windstorms, and transportation incidents have resulted in the most significant damages within the planning area. Current trends show an increase in event magnitude and a higher number of occurrences for several hazards, as will be explained in *Section Four: Risk Assessment*.

Mitigation Strategies

There are a wide variety of strategies that can be used to reduce the impacts of hazards for the built environment and planning area residents. *Section Five: Mitigation Strategy* shows the mitigation and strategic actions chosen by the participating jurisdictions to assist in preventing future losses.

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Section One: Introduction

Hazard Mitigation Planning

Severe weather and hazardous events are occurring more frequently in our daily lives. Pursuing mitigation strategies reduces these risks and is socially and economically responsible to prevent long-term risks from natural and human-caused hazard events.

Natural hazards, such as severe winter storms, high winds and tornadoes, severe thunderstorms, flooding, extreme heat, drought, agriculture diseases, and wildfires are part of the world around us. Human-caused hazards are a product of society and can occur with significant impacts to communities. Human-caused hazards can include dam failure, hazardous materials release, transportation incidents, and terrorism. These hazard events can occur as a part of normal operation or as a result of human error. All jurisdictions participating in this planning process are vulnerable to a wide range of natural and human-caused hazards that threaten the safety of residents and have the potential to damage or destroy both public and private property, cause environmental degradation, and disrupt the local economy and overall quality of life.

Kossuth County has prepared this multi-jurisdictional hazard mitigation plan in an effort to reduce impacts from natural and human-caused hazards and to better protect the people and property of the region from the effects of these hazards. This plan demonstrates a regional commitment to reducing risks from hazards and serves as a tool to help decision makers establish mitigation activities and resources. Further, this plan was developed to ensure the county and participating jurisdictions are eligible for federal Hazard Mitigation Assistance (HMA) programs and to accomplish the following objectives:

- Minimize the disruption to each jurisdiction following a disaster.
- Establish actions to reduce or eliminate future damages in order to efficiently recover from disasters.
- Investigate, review, and implement activities or actions to ensure disaster related hazards are addressed by the most efficient and appropriate solution.
- Educate citizens about potential hazards.
- Facilitate development and implementation of hazard mitigation management activities to ensure a sustainable community.



FEMA definition of
Hazard Mitigation

"Any sustained action taken to reduce or eliminate the long-term risk to human life and property from [natural] hazards."

Disaster Mitigation Act of 2000

The U.S. Congress passed the Disaster Mitigation Act 2000 to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act¹. Section 322 of the DMA 2000 requires that state and local governments develop, adopt, and routinely update a hazard mitigation plan to remain eligible for pre- and post-disaster mitigation funding.² These funds currently include the Hazard Mitigation Grant Program (HMGP)³, Building Resilient Infrastructure and Communities (BRIC)⁴, and the Flood Mitigation Assistance Program (FMA)⁵. The Federal Emergency Management Agency (FEMA) administers these programs under the Department of Homeland Security.⁶

This plan was developed in accordance with current state and federal rules and regulations governing local hazard mitigation plans. The plan shall be monitored and updated on a routine basis to maintain compliance with the legislation – Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the DMA 2000 (P.L. 106-390)⁷ and by FEMA’s Final Rule (FR)⁸ published in the Federal Register on November 30, 2007, at 44 Code of Federal Regulations (CFR) Part 201.

Hazard Mitigation Assistance

On June 1, 2009, FEMA initiated the Hazard Mitigation Assistance (HMA) program integration, which aligned certain policies and timelines of the various mitigation programs. These HMA programs present a critical opportunity to minimize the risk to individuals and property from hazards while simultaneously reducing the reliance on federal disaster funds.

Each HMA program was authorized by separate legislative actions, and as such, each program differs slightly in scope and intent.

Mitigation is the cornerstone of emergency management. Mitigation focuses on breaking the cycle of disaster damage, reconstruction, and repeated damage. Mitigation lessens the impact disasters have on people's lives and property through damage prevention, appropriate development standards, and affordable flood insurance. Through measures such as avoiding building in damage-prone areas, stringent building codes, and floodplain management regulations, the impact on lives and communities is lessened.
- FEMA Mitigation Directorate

- **HMGP:** To qualify for post-disaster mitigation funds, local jurisdictions must adopt a mitigation plan that is approved by FEMA. HMGP provides funds to states, territories, Indian tribal governments, local governments, and eligible private non-profits following a presidential disaster declaration. The DMA 2000 authorizes up to seven percent of HMGP

1 Federal Emergency Management Agency, Public Law 106-390. 2000. "Disaster Mitigation Act of 2000." https://www.fema.gov/sites/default/files/2020-11/fema_disaster-mitigation-act-of-2000_10-30-2000.pdf.

2 Federal Emergency Management Agency. 2021. "Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, and Related Authorities." Federal Emergency Management Agency 592: 22. Sec. 322. Mitigation Planning (42 U.S.C. 5165). https://www.fema.gov/sites/default/files/documents/fema_stafford_act_2021_vol1.pdf.

3 Federal Emergency Management Agency. "Hazard Mitigation Grant Program." Last modified August 6, 2021. <https://www.fema.gov/grants/mitigation/hazard-mitigation>.

4 Federal Emergency Management Agency. "Building Resilient Infrastructure and Communities." Last modified December 1, 2021. <https://fema.gov/bric>.

5 Federal Emergency Management Agency. "Flood Mitigation Assistance Grant Program." Last modified August 6, 2021. <https://www.fema.gov/flood-mitigation-assistance-grant-program>.

6 Federal Emergency Management Agency. "Hazard Mitigation Assistance." Last modified September 30, 2021. <https://www.fema.gov/grants/mitigation>.

7 Federal Emergency Management Agency: Federal Register. 2002. "Section 104 of Disaster Mitigation Act 2000: 44 CFR Parts 201 and 206: Hazard Mitigation Planning and Hazard Mitigation Grant Programs; Interim Final Rule." <https://www.fema.gov/pdf/help/fr02-4321.pdf>.

8 Federal Emergency Management Agency: Federal Register. 2002. "44 CFR Parts 201 and 206: Hazard Mitigation Planning and Hazard Mitigation Grant Programs; Interim Final Rule." <https://www.fema.gov/pdf/help/fr02-4321.pdf>.

funds available to a state after a disaster to be used for the development of state, tribal, and local mitigation plans.

- **FMA:** This program provides grant funds to implement projects such as acquisition or elevation of flood-prone homes. Jurisdictions must be participating communities in the National Flood Insurance Program (NFIP) to qualify for this grant. The goal of FMA is to reduce or eliminate claims under the NFIP.
- **BRIC:** This program replaced the Pre-Disaster Mitigation Program beginning in 2020 and provides funds on an annual allocation basis to local jurisdictions for implementing programs and projects to improve resiliency and local capacity before disaster events.
- **PDM:** The PDM grant program makes federal funds available to state, local, tribal, and territorial governments to implement measures designed to reduce the risk to individuals and property from future natural hazards.
- **FMAg:** Section 404 of the Stafford Act allows FEMA to provide HMGP grants to any area that received a Fire Management Assistance Grant declaration even if no major Presidential declaration was made. FMAg aids communities in implementing long-term mitigation measures after a wildfire event.

For more information about these grant programs and other funding opportunities to help implement identified mitigation actions see *Appendix D: Hazard Mitigation Project Funding Guidebook*.

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Section Two: Planning Process

Introduction

The process utilized to develop a hazard mitigation plan is often as important as the final planning document. For this planning process, Kossuth County adapted the four-step hazard mitigation planning process outlined by FEMA to fit the needs of the participating jurisdictions. The following pages will outline how the Hazard Mitigation Planning Team was established; the function of the Hazard Mitigation Planning Team; critical project meetings and community representatives; outreach efforts to the general public; key stakeholders and neighboring jurisdictions; general information relative to the risk assessment process; general information relative to local/regional capabilities; plan review and adoption; and ongoing plan maintenance.

Requirement §201.6(b): Planning process. An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- (1): An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- (2): An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
- (3): Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Requirement §201.6(c)(1): The plan shall document the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Multi-Jurisdictional Approach

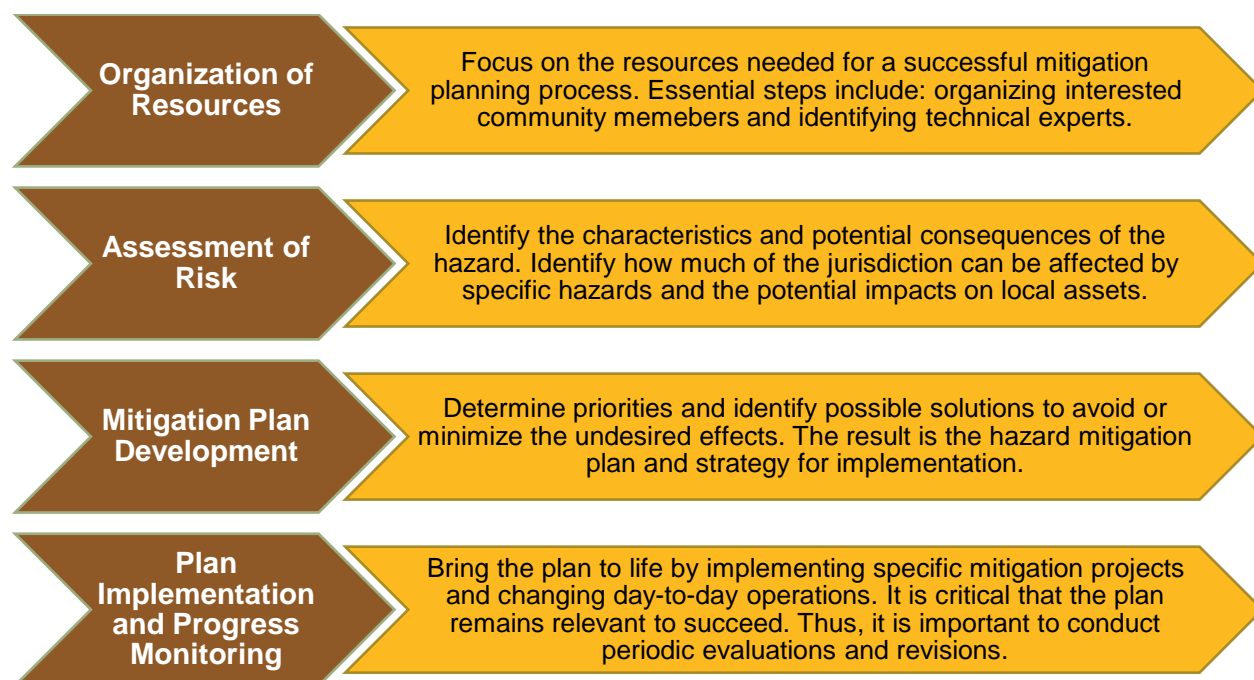
According to FEMA, “A multi-jurisdictional hazard mitigation plan is a plan jointly prepared by more than one jurisdiction.” The term ‘jurisdiction’ means ‘local government.’ Title 44 Part 201, Mitigation Planning in the CFR, defines a ‘local government’ as “any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments, regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, any rural community, unincorporated town or village, or other public entity.” For the purposes of this plan, a ‘taxing authority’ was utilized as the qualifier for jurisdictional participation. FEMA recommends the multi-jurisdictional approach under the DMA 2000 for the following reasons.

- It provides a comprehensive approach to the mitigation of hazards that affect multiple jurisdictions.
- It allows economies of scale by leveraging individual capabilities and sharing cost and resources.
- It avoids duplication of efforts.
- It imposes an external discipline on the process.

Both FEMA and HSEMD recommend this multi-jurisdictional approach through the cooperation of counties and regional emergency management. Kossuth County utilized the multi-jurisdiction planning process recommended by FEMA (Local Mitigation Planning Policy Guide⁹, Local Mitigation Planning Handbook¹⁰, and Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards¹¹) to develop this plan.

Hazard Mitigation Planning Process

The hazard mitigation planning process as outlined by FEMA has four general steps which are detailed below. The mitigation planning process is rarely a linear process. It's common that ideas developed during the initial risk assessment may need revision later in the process, or that additional information may be identified while developing the mitigation plan or during plan implementation that results in new goals or additional risk assessments.



Organization of Resources

Plan Update Process

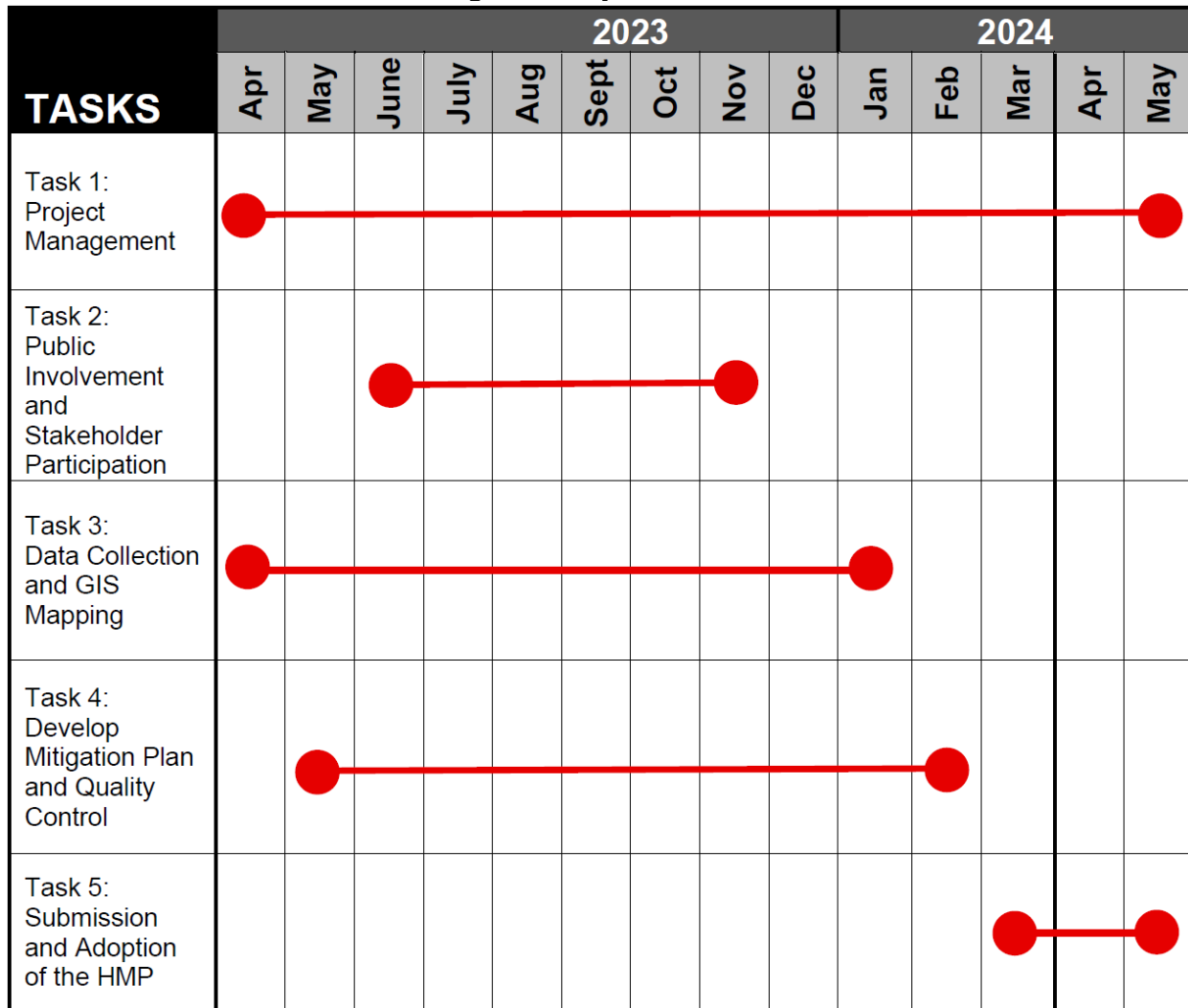
The Kossuth County Emergency Management Agency funded this planning effort through an award from the FEMA Hazard Mitigation Grant Program. JEO Consulting Group, Inc. (JEO) was contracted in March 2023 to guide and facilitate the planning process and write and assemble the multi-jurisdictional hazard mitigation plan. For the planning area, Charissa Mueller with Kossuth County EMA led the development of the plan and served as the primary point of contact throughout the project. A clear timeline of this plan update process is provided in Figure 2.

9 Federal Emergency Management Agency. April 19, 2022. "Local Mitigation Planning Policy Guide."
https://www.fema.gov/sites/default/files/documents/fema_local-mitigation-planning-policy-guide_042022.pdf.

10 Federal Emergency Management Agency. May 2023. "Local Mitigation Planning Handbook."
https://www.fema.gov/sites/default/files/documents/fema_local-mitigation-planning-handbook_052023.pdf.

11 Federal Emergency Management Agency. 2013. "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards."
https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf.

Figure 2: Project Timeline



Planning Team

At the beginning of the planning process, Kossuth County Emergency Management and JEO staff identified who would comprise the regional Hazard Mitigation Planning Team. This planning team was established to guide the planning process, review the existing plan, and serve as a liaison to plan participants throughout the planning area. A list of planning team members can be found in Table 4. Staff from IDNR provided additional technical support.

Table 4: Hazard Mitigation Planning Team

Name	Title	Jurisdiction
Charissa Mueller	Emergency Management Coordinator	Kossuth County EMA
Art Pixler	City Council Member	City of Fenton
Bob Gilbertson	City Council Member	City of Ledyard
Josh Waechter	County Board Supervisor	Kossuth County
Randy Bollinger	City Council Member	City of Lone Rock
Rick Murphy	Mayor	City of Algona
Sharon Cowin	Mayor	City of Ledyard

Name	Title	Jurisdiction
Jordan Jahnke	Fire Chief/City Maintenance	City of Burt
Tom Johnson	Mayor	City of Bancroft
Becky Appleford	Project Manager	JEO Consulting Group, Inc.
Erin Pingel	Grant Writer	JEO Consulting Group, Inc.
Anthony Kohel	Planner	JEO Consulting Group, Inc.
Libbie Smith	Planning Intern	JEO Consulting Group, Inc.

**Served in a consultant or advisory role.*

A kick-off meeting was held on May 2, 2023, to discuss an overview of the planning process between JEO staff and members of the Hazard Mitigation Planning Team. Preliminary discussion was held over hazards to be included in this plan, changes to be incorporated since the last plan, goals, identification of key stakeholders to include in the planning process, and a general schedule for the plan update. This meeting also assisted in clarifying the role and responsibilities of the Hazard Mitigation Planning Team and strategies for public engagement throughout the planning process. Table 5 shows kick-off meeting attendees.

Table 5: Kick-off Meeting Attendees

Name	Title	Jurisdiction
Algona, Iowa – Tuesday, May 2, 2023		
Charissa Mueller	Emergency Management Coordinator	Kossuth County EMA
Art Pixler	City Council Member	City of Fenton
Bob Gilbertson	City Council Member	City of Ledyard
Josh Waechter	County Board Supervisor	Kossuth County
Kyle Bissel	Emergency Management Coordinator	Humbolt County EMA
Randy Bollinger	City Council Member	City of Lone Rock
Rick Murphy	Mayor	City of Algona
Sharon Cowin	Mayor	City of Ledyard
Jordan Jahnke	Fire Chief/City Maintenance	City of Burt
Tom Johnson	Mayor	City of Bancroft
Becky Appleford	Project Manager	JEO Consulting Group, Inc.
Erin Pingel	Grant Writer	JEO Consulting Group, Inc.

Table 6 shows the date, location, and agenda items for the kick-off meeting.

Table 6: Kick-off Meeting Location and Time

Location and Time	Agenda Items
Algona, Iowa May 2, 2023 6:00 PM	<ul style="list-style-type: none"> -Consultant and planning team responsibilities -Overview of plan update process and changes from 2019 HMP -Review and adoption of goals -Plan goals -Hazard identification -Project schedule and dates/locations for public meetings

Figure 3: Kickoff Meeting

Public Involvement and Outreach

To notify and engage the public in the planning process, a wide range of stakeholder groups were also contacted and encouraged to participate. There were 14 stakeholder groups or entities that were identified and sent letters to participate (Table 7). Of the 14 invited, Mercy Health attended meetings and provided input. Any comments these stakeholders provided were incorporated into the appropriate sections throughout the HMP upfront and community profiles as appropriate. (see *Section Seven*).

Table 7: Notified Stakeholder Groups

Organizations		
Algona Area Chamber of Commerce	Kossuth County Extension	Swea City Clinic Mayo Health
Algona Municipal Airport	Kossuth Regional Health Center - Bancroft	Titonka Area Economic Development Corporation
Bancroft Iowa Chamber of Commerce	Kossuth Regional Health Center - Clinic	Titonka Care Center
City of Bancroft & Bancroft Municipal Utilities	Kossuth Regional Health Center - Hospital	Wesley Medical Clinic
Kossuth County Conservation Board	Mercy Health	

Neighboring Jurisdictions

Neighboring jurisdictions were notified and invited to take part in the planning process. The following table indicates which neighboring entities were notified of the planning process. Invitation and informational letters were sent to county emergency managers. Humboldt County was the only jurisdiction outside the planning area to take part in the planning process.

Table 8: Notified Neighboring Jurisdictions

Notified Neighboring Jurisdictions	
Emmet County	Palo Alto County
Hancock County	Winnebago County
Humboldt County	

Participant Involvement

Plan participants play a key role in identifying hazards, providing a record of historical disaster occurrences and localized impacts, identifying and prioritizing potential mitigation projects and strategies, and developing plan maintenance procedures.

A plan participant is defined as a jurisdiction that fulfills the following requirements: have one representative present at the Round 1 and Round 2 meetings (or attend a follow-up meeting with a JEO planner); assist in data collection by completing worksheets; identify mitigation actions, review plan drafts; and adopt the plan by resolution.

Some jurisdictions sent multiple representatives to meetings. For jurisdictions who had only one representative, they were encouraged to bring meeting materials back to their governing bodies, to collect diverse input on their jurisdiction's meeting documents. Sign-in sheets from all public meetings can be found in *Appendix A*. Jurisdictions that were unable to attend the scheduled public meetings were able to watch a recording of the meetings or request a meeting with JEO staff to satisfy the meeting attendance requirements. This effort enabled jurisdictions which could not attend a scheduled public meeting to participate in the planning process.

Outreach to eligible jurisdictions included notification prior to all public meetings, phone calls and email reminders of upcoming meetings, and reminders to complete worksheets required for the planning process. Table 9 provides a summary of outreach activities utilized in this process.

Table 9: Outreach Activity Summary

Action	Intent
Project Website	Informed the public and local/planning team members of past, current, and future activities (https://www.jeo.com/KossuthCountyHMP).
Press Release	Shared with Hazard Mitigation Planning Team and sent to local media outlets for dispersal.
Round 1 Meeting Letters and Emails (30-day notification)	Sent to participants, stakeholders, and neighboring jurisdictions to discuss the agenda/dates/times/ locations of the first round of public meetings.
Round 2 Meeting Letters and Emails (30-day notification)	Sent to participants to discuss the agenda/dates/times/locations of the second round of public meetings.
Notification Phone Calls	Called potential participants to remind them about upcoming meetings.

Action	Intent
Follow-up Emails and Phone Calls	Correspondence was provided to remind and assist participating jurisdictions with the collection and submission of required local data.
Project Flyer	Flyers were posted about the Kossuth County HMP and how to get involved. Flyers were shared with all Hazard Mitigation Planning team members to distribute.
Word-of-Mouth	Staff discussed the plan with jurisdictions throughout the planning process.

Notifying and engaging the public was conducted throughout the plan drafting process. All meeting dates, times, and locations were posted online on the project website. A press release about the process was shared on local social media sites and to local news outlets. Project flyers were shared with local planning team representatives and were posted at community hubs including local post offices, city hall buildings, local libraries, and coffee shops. Participating jurisdictions also discussed and reviewed HMP materials at local council meetings which are open to the public.

Round 1 Meeting: Hazard Identification

At the Round 1 meeting, jurisdictional representatives (i.e., the local planning teams) reviewed the hazards identified at the kick-off meeting and conducted risk and vulnerability assessments based on these hazards' previous occurrence and the communities' exposure. (For a complete list of hazards reviewed, see *Section Four: Risk Assessment*).

Table 10 shows the date and meeting location held for the Round 1 meeting phase of the project.

Table 10: Round 1 Meeting Date and Location

Agenda Items	
General overview of the HMP update process, discuss participation requirements, begin the process of risk assessment and impact reporting, update critical facilities, capabilities assessment, and status update on current mitigation and strategic projects	
Location and Time	Date
Kossuth County Emergency Response & Training Complex Algona, Iowa – 6:00 PM	Wednesday, August 9, 2023

The intent of this meeting was to familiarize local planning team members with the plan update process, expected actions for the coming months, the responsibilities of being a participant, and to collect preliminary information to update the HMP. Data collected at these meetings included: identify the top concerns from each jurisdiction; and to begin reviewing and updating community profiles for demographics, capabilities, and critical facilities. Information/data reviewed included but was not limited to local hazard prioritization results; identified critical facilities and their location within the community; future development areas; and expected growth trends (refer to *Appendix B*).

The following tables show the attendees for each jurisdiction who attended a Round 1 meeting or had a one-on-one discussion with JEO staff. Follow-up one-on-one meetings were held for communities who did not have representatives present at public meetings either through watching a recording of the meeting or via conference call with a member of the Hazard Mitigation Planning Team.

Table 11: Round 1 Meeting Attendees

Name	Title	Jurisdiction
Algona, Iowa – Wednesday, August 9, 2023		
Charissa Mueller	Emergency Management Coordinator	Kossuth County EMA
Aaron Montag	Sanitarian	Kossuth County
Art Pixler	Council Member	City of Fenton
Bob Gilbertson	City Council Member	City of Ledyard
Craig Larson	Mayor	City of Wesley
Debra Steven	Council Member	City of Lakota
Doug Miller	Engineer	Kossuth County
Joshua Waechter	Board of Supervisors	Kossuth County
Katie Prothman	City Council Member	City of Titonka
Kendra Koppen	Public Health Nurse	Mercy Health
Kevin McPeak	Mayor	City of Lu Verne
Kyle Bissel	Emergency Management Coordinator	Humbolt County EMA
Randy Bollinger	City Council Member	City of Lone Rock
Rick Murphy	Mayor	City of Algona
Roger Fisher	Sheriff	Kossuth County
Thomas Johnson	Mayor	City of Bancroft
Becky Appleford	Project Manager	JEO Consulting Group, Inc.
Erin Pingel	Grant Writer	JEO Consulting Group, Inc.

Table 12: Round 1 Recorded Meeting Viewers

Name	Title	Jurisdiction
Joe Carter	Superintendent	Algona School District
Joe Jahnke	City Superintendent	City of Burt
Julie Runksmeier	Principal	North Kossuth School District
John Crookshank	Fire Chief	City of Swea City
Stu Simonson	Mayor Pro-Tem/Council Member	City of Whittemore

Round 2 Meeting: Mitigation Strategies

The Round 2 meeting is designed to identify and prioritize mitigation measures, update previous mitigation actions from the 2019 HMP, and evaluate potential integration of the HMP alongside other local planning mechanisms. Mitigation and strategic actions and plan integration are essential components in effective hazard mitigation plans. Participating jurisdictions were asked to identify any new mitigation and strategic actions to pursue alongside continued actions from the 2019 HMP and provide copies or descriptions of current jurisdictional plans in which hazard mitigation goals and principals can be integrated. Participating jurisdictions were also asked to review the information collected from the Round 1 meeting related to their community through this planning process for accuracy. Information/data reviewed included but was not limited to local hazard prioritization results, identified critical facilities and their location within the community, future development areas, and expected growth trends (refer to *Appendix B*).

There was also a brief discussion about the planning process, when the plan would be available for public review and comment, annual review of the plan, and the approval and grant opportunities available once the plan was approved. As with the Round 1 meeting, any jurisdictions unable to attend were given the opportunity to have a one-on-one phone conference with the consultant or view a recording of the meeting in order to meet plan participation requirements and complete required information. Table 13 shows the date and location of the Round 2 Meeting. Meeting attendees are identified in Table 14 and Table 15.

Table 13: Round 2 Meeting Date and Location

Agenda Items	
Identify new mitigation and strategic actions, review of local data and community profile, discuss review process, discuss available grants and eligibility, and complete plan integration tool.	
Location and Time	Date
Kossuth County Emergency Response & Training Complex Algona, Iowa – 6:00 PM	Wednesday, January 10, 2024

Table 14: Round 2 Meeting Attendees

Name	Title	Jurisdiction
Algona, Iowa – Wednesday, January 10, 2024		
Charissa Mueller	Emergency Management Coordinator	Kossuth County EMA
Aaron Montag	Sanitarian	Kossuth County
Art Pixler	Council Member	City of Fenton
Bob Gilbertson	City Council Member	City of Ledyard
Craig Larson	Mayor	City of Wesley
Debra Steven	Council Member	City of Lakota
Jacob Tjaden	City Administrator	City of Algona
Joshua Waechter	Board of Supervisors	Kossuth County
Katie Prothman	City Council Member	City of Titonka
Kendra Koppen	Public Health Nurse	Mercy Health
Kevin McPeak	Mayor	City of Lu Verne
Randy Bollinger	City Council Member	City of Lone Rock
Rick Murphy	Mayor	City of Algona
Thomas Johnson	Mayor	City of Bancroft
Becky Appleford	Project Manager	JEO Consulting Group, Inc.

Name	Title	Jurisdiction
Erin Pingel	Grant Writer	JEO Consulting Group, Inc.

Table 15: Round 2 Recorded Meeting Viewers

Name	Title	Jurisdiction
Joe Carter	Superintendent	Algona School District
Joe Jahnke	City Superintendent	City of Burt
Julie Runksmeier	Principal	North Kossuth School District
John Crookshank	Fire Chief	City of Swea City
Stu Simonson	Mayor Pro-Tem/Council Member	City of Whittemore

Public Review

Once the HMP draft was completed, a public review period was opened to allow participants and community members at large to review the plan, provide comments, and request changes. The public review period was open from March 21, 2024, through April 17, 2024. Participating jurisdictions and additional stakeholders were emailed or mailed a letter notifying them of this public review period. A list of the stakeholders notified can be found in Table 16. The draft HMP was also made available on the project website (<https://www.jeo.com/KossuthCountyHMP>) for download. Jurisdictions and the public could provide comments via mail, email, or by using the comment box on the project website. Communities were encouraged to share or post information about the public review period to local websites and through local news media. A press release about the public review period was also distributed by County Emergency Management to media outlets.

Table 16: Stakeholders Notified about Public Review

Notified Stakeholders		
Algona Area Chamber of Commerce	Humboldt County	St. John the Baptist Catholic Church - Bancroft
Algona Municipal Airport	Immanuel Lutheran Church – Lone Rock	St. John's Lutheran Church – Burt
Bancroft Iowa Chamber of Commerce	Immanuel Lutheran Church – Swea City	St. John's Lutheran Church – Fenton
Bishop Garrigan Schools	Iowa DHSEM	St. Joseph's Church – Wesley
Divine Mercy Catholic Parish - Algona	Kossuth County Care Team	St. Michaels Catholic Church – Whittemore
Emmet County	Kossuth County Conservation Board	St. Paul Lutheran Church – Lakota
First Baptist Church – Bancroft	Kossuth County Economic Development	St. Paul's Lutheran Church - Whittemore
First Congregational Church – Algona	Kossuth County Extension	St. Thomas Episcopal Church - Algona
First Lutheran Church – Algona	Kossuth Regional Health Center	Titonka Care Center
First Presbyterian Church - Algona	Main Street Manor	Trinity Lutheran - Algona
First Presbyterian Church – Lakota	North Iowa Regional Housing Authority	United Methodist Church – Fenton
First United Methodist Church - Algona	Open Bible Church – Swea City	United Methodist Church – Swea City
Grace Church - Algona	Palo Alto County	Wesley Medical Clinic

Notified Stakeholders		
Hancock County	Presbyterian Church – Burt	Winnebago County

No comments were received from participants or stakeholders during the public review period.

Plan Adoption and Implementation

Based on FEMA requirements, this multi-jurisdictional hazard mitigation plan must be formally adopted by each participant through approval of a resolution. This approval will create individual ownership of the plan by each participant. Formal adoption provides evidence of a participant's full commitment to implementing the plan's goals and action items. A copy of the resolution draft submitted to participating jurisdictions is located in *Appendix A*. Copies of adoption resolutions may be requested from the HSEMD's State Hazard Mitigation Officer.

Requirement

§201.6(c)(5): For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

Hazard mitigation plans are living documents. Once an HMP has been adopted locally, participants are responsible for implementing identified projects, maintaining the plan with relevant information, and fully updating the plan every five years. The plan must be monitored, evaluated, and updated on a five-year cycle or less. Those who participated directly in the planning process would be logical champions during reviews between the five-year cycle update of the plan. It is critical that the plan be reviewed at regular intervals and when a hazard event occurs that significantly affects the area or individual participants. These reviews are the responsibility of each jurisdiction's local planning team and should be documented and reflected in the plan. Participants are encouraged to work alongside the plan sponsor, Kossuth County EMA, or the consultant, JEO, to document updates and revise the HMP as needed. See *Section Six: Plan Implementation and Maintenance* for additional information on plan amendments.

Additional implementation of the mitigation plan should include integrating HMP goals and mitigation and strategic actions into county and local comprehensive or capital improvement plans as they are developed or updated. *Section Six* describes the system that jurisdictions participating in the HMP have established to monitor the plan; provides a description of how, when, and by whom the HMP process and mitigation and strategic actions will be evaluated; presents the criteria used to evaluate the plan; and explains how the plan will be maintained and updated.

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Section Three: County Profile

Introduction

To identify jurisdictional vulnerabilities, it is vitally important to understand the people and built environment of the county. The following section provides a description of the characteristics of the county to create an overall profile. Many characteristics are covered in each jurisdiction’s community profile including demographics, employment, and transportation routes. Redundant information will not be covered in this section. Therefore, this section highlights county specific information and will also serve as the county’s profile.

County Geographic Summary

The project area comprises Kossuth County, which is located in north central Iowa. The county covers 974 square miles and sits on the Minnesota border. There are thirteen incorporated communities in the county, with the City of Algona being the county seat. Figure 4 shows the county, incorporated communities, and location within the state. Kossuth County resides in the Des Moines Lobe landform region. The Des Moines Lobe region is noted for its smaller lakes, wetlands, and ridges caused by a glacier 14,000 years ago.^{12 13}

Three watershed regions cover Kossuth County: the East Fork Des Moines, Blue Earth, and Boone watersheds. Main waterways in the planning area include the East Fork Des Moines River and the Blue Earth River. The county is also home to the Union Slough National Wildlife Refuge in central Kossuth County, which includes a number of waterbodies such as Smith Pool.

Climate

The average high temperature in Kossuth County for the month of July is 83 degrees and the average low temperature for the month of January is 6 degrees. On average, Kossuth County receives about 34 inches of rain and 38 inches of snowfall per year. Climate data is helpful in determining if certain events are higher or lower than normal. For example, if the high temperatures in the month of July are running well into the 90s, high heat events may be more likely which could impact vulnerable populations.

Table 17: Kossuth County Climate

	Kossuth County
July Normal High Temp	83.1 °F
January Normal Low Temp	6 °F
Annual Normal Precipitation	34.1 inches
Annual Normal Snowfall	38.3 inches

Source: NCEI U.S. Climate Normals¹⁴,
Precipitation includes all rain and melted snow and ice.

12 Iowa State University Geographic Information Systems Support & Research Facility. 2022. “Iowa – Landforms Regions and Features.” <https://www.arcgis.com/apps/mapviewer/index.html?layers=6e1858f40e6545ec9f15538cc8c65180>.
13 Iowa Geological Survey. 2017. “Landform Regions of Iowa.” https://www.ihr.uiowa.edu/igs/publications/uploads/2017-04-27_15-04-11_em44.pdf.
14 National Centers for Environmental Information. “1991-2020 U.S. Climate Normals.” Accessed May 2023. <https://www.ncei.noaa.gov/access/us-climate-normals/>.

Figure 4: Map of Project Area

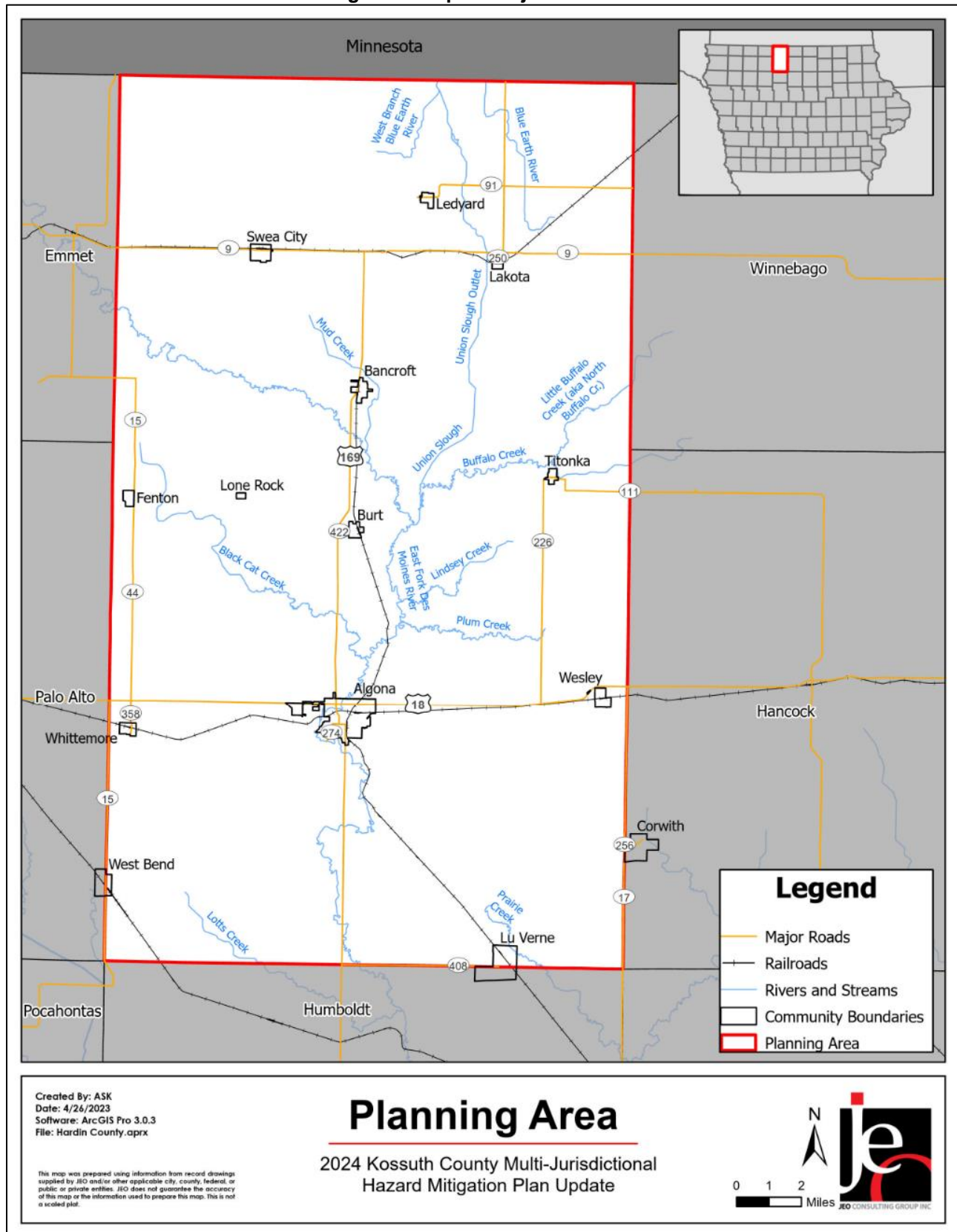
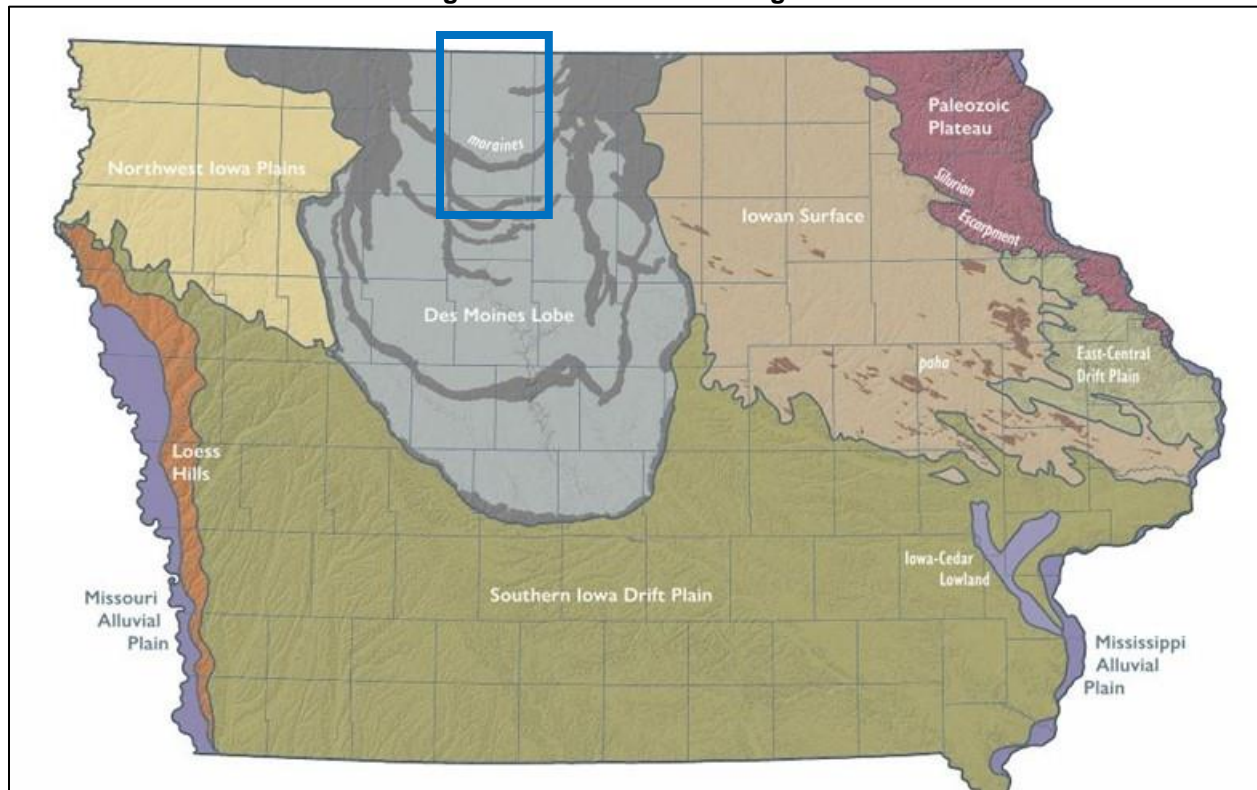


Figure 5: Iowa Landform Regions

Source: Iowa State University, 2017¹⁵

Demographics

Demographic and asset information can be used to determine levels of vulnerability via population and housing, structural inventories and valuations, critical facilities, and other vulnerable areas analysis. This population includes a range of demographic cohorts and persons at risk to natural and man-made disasters. The following figures depict the historical population of the county and the age cohort breakdown in 2021.¹⁶

¹⁵ Iowa Geological Survey. 2017. "Landform Regions of Iowa." https://www.ihr.uiowa.edu/igs/publications/uploads/2017-04-27_15-04-11_em44.pdf.

¹⁶ United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov>.

Figure 6: County Population 1860-2020

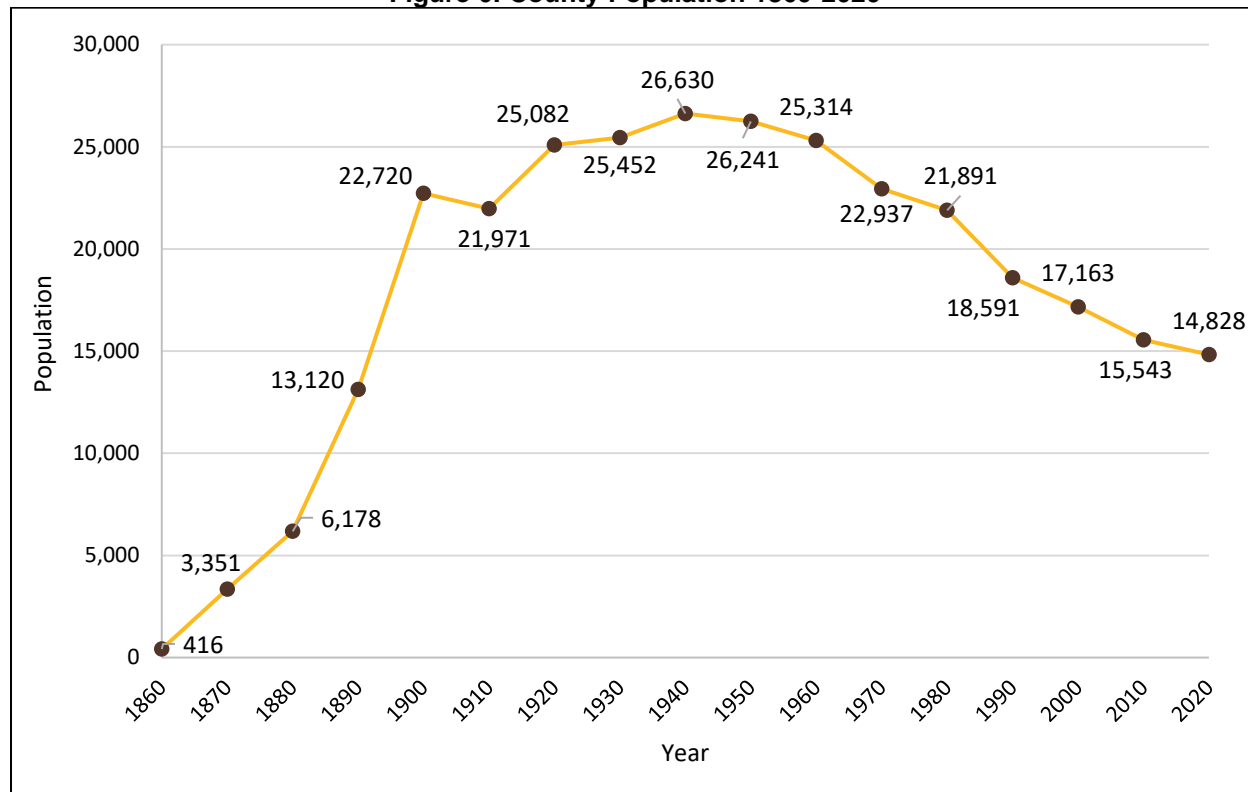
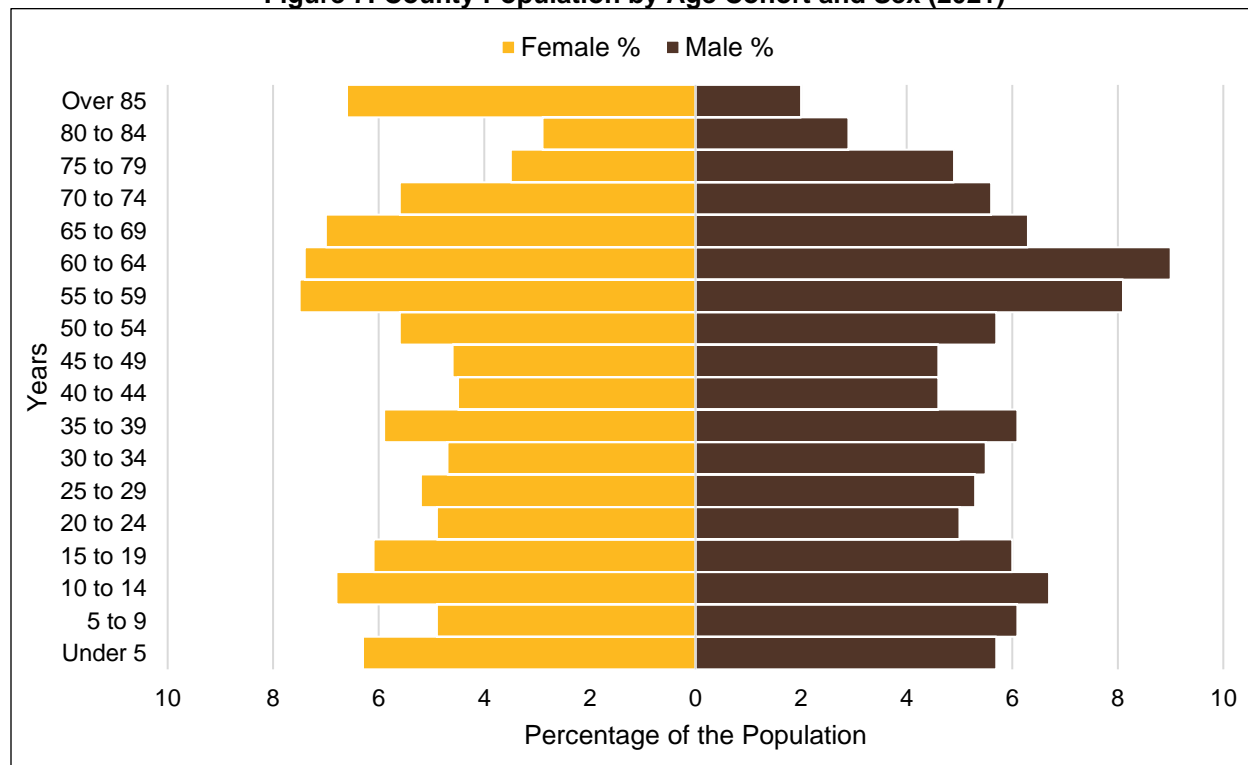


Figure 7: County Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau

Table 18: Population within the County (2021)

Jurisdiction	2010 Population	2021 Population (Estimated)
City of Algona	5,560	5,407
City of Bancroft	732	673
City of Burt	533	578
City of Fenton	279	235
City of Lakota	255	309
City of Ledyard	130	94
City of Lone Rock	146	101
City of Lu Verne	261	255
City of Swea City	536	739
City of Titonka	476	392
City of Wesley	390	378
City of Whittemore	504	514
Total*	15,543	14,823

Source: U.S. Census Bureau

*Includes unincorporated Kossuth County population

The population for the county has decreased since the 2010 census (15,543 persons to 14,823 persons). That trend may continue as a slightly higher percentage of individuals are over 40 years old. The median age for the county is 44.7 which is older than the State of Iowa at 38.3. The county accounts for approximately 0.5% of the total population for the state in 2021. Since 2010, most of the cities in the county have seen a decline in population. A declining population can lead to more unoccupied and unmaintained housing that is then at risk to high winds and other hazards. Unoccupied housing may also be an economic indicator that future development is unlikely to occur. Furthermore, with fewer residents, tax revenue decreases, which could make implementing mitigation projects more fiscally challenging. On the other hand, increasing populations are associated with increased hazard mitigation and emergency planning requirements for development. Increasing populations can also contribute to increasing tax revenues, allowing communities to pursue additional mitigation projects.

At-risk Populations

In general, at-risk populations may have difficulty with medical issues, poverty, extremes in age, and communication issues due to language barriers. Several outliers may be considered when discussing potentially at-risk populations, including:

- Not all people who are considered “at-risk” are at risk;
- Outward appearance does not necessarily mark a person as at-risk;
- A hazard event will, in many cases, impact at-risk populations in different ways.

The National Response Framework defines at-risk populations as “...populations whose members may have additional needs before, during, and after an incident in functional areas, including but not limited to: maintaining independence, communication, transportation, supervision, and medical care.”¹⁷

17 United States Department of Homeland Security. October 2019. “National Response Framework Third Edition.” <https://www.fema.gov/media-library/assets/documents/117791>.

Dependent children under 18 years old are one of the most vulnerable populations to disasters.¹⁸ The majority of people in this age group do not have access to independent financial resources and transportation. They lack practical knowledge necessary to respond appropriately during a disaster. Despite this vulnerability, children are generally overlooked in disaster planning because the presence of a caretaker is assumed. With approximately 24% of the planning area's population younger than 20, children are a key vulnerable group to address in the planning process.

Schools house a high number of children within the county during the daytime hours of weekdays, as well as during special events on evenings and weekends. The following table identifies the various public school districts located within the county, and Figure 8 displays a map of the school district boundaries.

Table 19: Public School Inventory

School District	Total Enrollment (2022-2023)	Total Teachers
Algona Community School District	1,593	111
North Kossuth Community School District	268	31

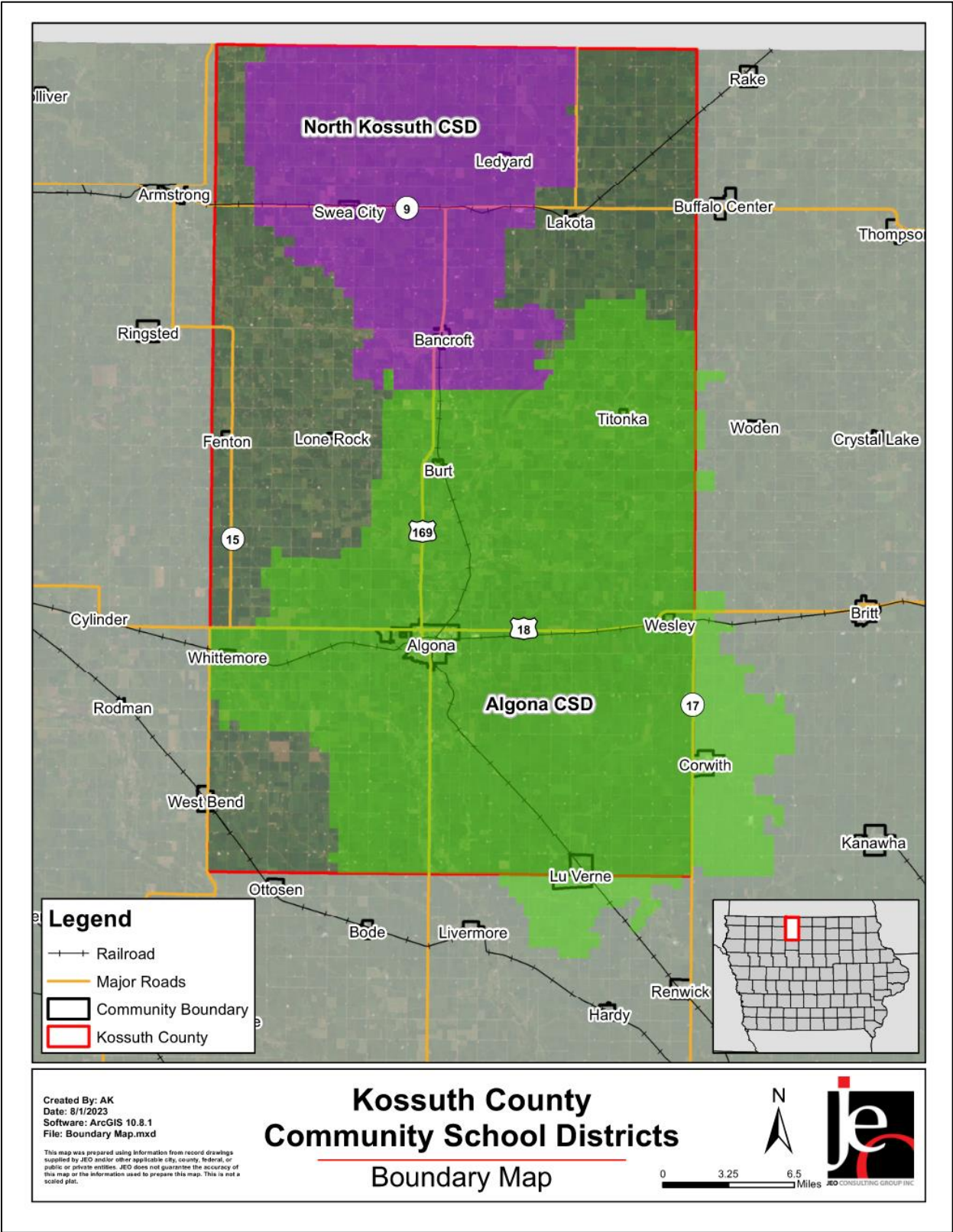
Source: Iowa Department of Education^{19 20}

18 Flanagan, Gregory, Hallisey, Heitgerd, & Lewis. 2011. "A Social Vulnerability Index for Disaster Management." Journal of Homeland Security and Emergency Management, 8(11): Article 3.

19 Iowa Department of Education. "Iowa Public School District PreK-12 Enrollments by District, Grade, Race and Gender." Accessed May 2023. <https://educateiowa.gov/data-reporting/education-statistics-pk-12>.

20 Iowa Department of Education. "2022-2023 Iowa Public School and AEA Teacher and Teacher Leader Information." Accessed May 2023. <https://educateiowa.gov/documents/2022-2023-iowa-public-school-and-aea-teacher-and-teacher-leader-information>.

Figure 8: County School Districts



Like minors, seniors (age 65 and greater) are often more significantly impacted by hazards and temperature extremes. During prolonged heat waves or periods of extreme cold, seniors may lack resources to effectively address hazard conditions and as a result may incur injury or potentially death. Prolonged power outages (either standalone events or as the result of other contributing factors) can have significant impacts on any citizen relying on medical devices. One study conducted by the Center for Injury Research and Policy found that increases in vulnerability related to severe winter storms (with significant snow accumulations) begin at age 55.²¹ The study found that on average there are 11,500 injuries and 100 deaths annually related to snow removal. Men over the age of 55 are 4.25 times more likely to experience cardiac events during snow removal. On the other hand, women can have a more difficult time during post-disaster recovery than men, often due to sector-specific employment, lower wages, and family care responsibilities.

Residents below the poverty line may lack resources to prepare for, respond to, or recover from hazard events. Residents with limited economic resources will struggle to prioritize the implementation of mitigation measures over more immediate needs. Further, residents with limited economic resources are more likely to live in older, more vulnerable structures. These structures could be mobile homes, located in the floodplain, located near known hazard sites (e.g., chemical storage areas), or older poorly maintained structures. Residents below the poverty line will be more vulnerable to all hazards within the county.

Residents who speak English as a second language may struggle with a range of issues before, during, and after hazard events. General vulnerabilities revolve around what could be an inability to effectively communicate with others or an inability to comprehend materials aimed at notification and/or education if a hazard event. When presented with a hazardous situation it is important that all community members be able to receive, decipher, and act on relevant information. An inability to understand warnings and notifications may prevent non-native English speakers from reacting in a timely manner. Further, educational materials related to regional hazards are most often developed in the dominant language for the area, for the county that would be English. Residents who struggle with English in the written form may not have sufficient information related to local concerns to effectively mitigate potential impacts. Residents with limited English proficiency would be at an increased vulnerability to all hazards within the county. Table 20 provides statistics for the county regarding individuals who speak English as a second language (ESL) and families reported as in poverty in the last 12 months.

Table 20: ESL and Poverty At-Risk Populations

Percent that speak English as second language	People below poverty level
2.5%	11.5%

Source: U.S. Census Bureau^{22 23}

Similar to residents below the poverty line, racial minorities tend to have access to fewer financial and systemic resources that would enable them to implement hazard mitigation and strategic projects and to respond and recover from hazard events, including residence in standard housing and possession of financial stability. The county is primarily White, non-Hispanic; however, racial

21 Center for Injury Research and Policy. January 2011. "Snow Shoveling Safety." Accessed July 2017.

<http://www.nationwidechildrens.org/cirp-snow-shoveling>.

22 United States Census Bureau. "2021 American Community Survey: S1601: Language Spoken at Home."

<https://data.census.gov/cedsci/>.

23 United States Census Bureau. "2021 American Community Survey: DP03: Selected Economic Characteristics."

<https://data.census.gov/>.

diversity has increased since 2010, which could affect the county's vulnerability to hazards (Table 21).

Table 21: Racial Composition Trends

Race	2010		2021		% Change
	Number	% of Total	Number	% of Total	
White, Not Hispanic	15,223	97.9%	14,138	95.4%	-7.1%
Black	44	0.3%	69	0.5%	+56.8%
American Indian and Alaskan Native	20	0.1%	97	0.7%	+385%
Asian	59	0.4%	81	0.5%	+37.3%
Native Hawaiian and Other Pacific Islander	4	0.0%	6	0.0%	+50%
Other Races	73	0.5%	113	0.8%	+54.8%
Two or More Races	120	0.8%	319	2.2%	+165.8%
Total Population	15,543	-	14,823	-	-

Source: U.S. Census Bureau^{24 25}

Governance

The county's governmental structure impacts its capability to implement mitigation actions. Kossuth County is governed by a five-member board of county supervisors. The county also has the following offices and departments.

- County Recorder
- County Assessor
- Sheriff
- County Treasurer
- County Auditor
- Administration
- Emergency Management
- Planning & Zoning
- Maintenance Department
- Secondary Roads
- Veterans' Service Office
- County Conservation
- County Environmental Health
- County Emergency Medical Services
- Information Technology

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the county's

24 United States Census Bureau. "2010 Census Redistricting Data (Public Law 94-171): P1: Race." <https://data.census.gov>.

25 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Table 22: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Economic Development Plan	No
	Emergency Operations Plan	Yes
	Floodplain Management Plan	Yes
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	No
	Community Wildfire Protection Plan	No
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	No
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes
	Chief Building Official	No
	Civil Engineering	Yes
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other: IT Backup Security System	Yes
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	No
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	No
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes

Survey Components/Subcomponents		Yes/No
	Ex. CERT Teams, Red Cross, etc.	
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	Yes
	Other (if any)	

National Flood Insurance Program (NFIP)

Kossuth County is a member of the NFIP, having joined on 5/1/1992. The county's Emergency Manager oversees the commitments and requirements of the NFIP, including enforcement of the local floodplain management regulations. The initial FIRM for the county was delineated on 6/19/2012 and the current effective map date is 3/20/2018, which has been adopted and incorporated into the county floodplain management regulations. As of September 30, 2022, the county has three NFIP policies in-force totaling \$455,000 in coverage. Permits are required for developments in the floodplain, in conjunction with Iowa DNR. The county does not currently have any repetitive loss or severe repetitive loss structures. The planning team has said that the county will continue to pursue good standing and involvement with the NFIP in the future.

After a flood event, the community implements substantial improvement and substantial damage provisions as outlined in FEMA's Substantial Improvement/Substantial Damage Desk Reference, which can be found here:

https://www.fema.gov/sites/default/files/documents/fema_nfip_substantial-improvement-substantial-damage-desk-reference.pdf.

Depending on the extent of flood impacts and number of substantial damage determinations needed, state resources may be sought, or a contractor could be hired to assist.

Table 23: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Moderate
Community support to implement projects	Moderate
Time to devote to hazard mitigation	Limited
Ability to expand and improve identified capabilities to achieve mitigation	Limited

Plan Integration

Kossuth County has multiple planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the county updates these planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

Kossuth County's funds are limited to maintaining current facilities and county systems. The amount of county funds has increased in recent years. Projects such as security at critical infrastructure are included in the county budget. In the last five years, the county applied for Emergency Management grants and ARPA grants. The county was awarded an ARPA grant.

Capital Improvement Plan - Transportation (2023)

The capital improvement plan outlines large transportation-related purchases and projects that the county would like to pursue. Projects identified in the plan include bridge improvements, widening roadways that would improve evacuations, and improving other existing county-owned structures. The capital improvement plan is updated annually.

Comprehensive Plan (2023)

The comprehensive plan is designed to guide the future actions and growth of the county. The plan contains goals and objectives aimed at Safe Growth, limits density in areas adjacent to known hazardous areas, and encourages clustering of development in sensitive areas. Currently there is no plan or timeline for the next update of the county's comprehensive plan.

Floodplain Regulations (2018), Zoning Ordinance (2023), and Subdivision Regulations (2023)

The county's floodplain regulations, zoning ordinance, and subdivision regulations outline where and how development should occur in the future. These documents contain floodplain maps, prohibit some development within the floodplain, discourage development in the floodplain, limit population density in the floodplain, prohibit filling of wetlands, discourage development near chemical storage sites, limit development in the ETJ, consider wildfire and wildfire urban interface, include well setback requirements, and include the ability to implement water restrictions. There is no timeline to update any of these documents.

Economics and Employment

The following table indicates that median household income and per capita income for the county is lower than the State of Iowa. Median home value and rent are also both lower than the rest of the state. Areas with relatively low economic indicators may influence a county's level of resilience during hazardous events.

Table 24: Housing and Income

	Kossuth County	State of Iowa
Median Household Income	\$59,878	\$65,429
Per Capita Income	\$32,238	\$34,817
Median Home Value	\$112,900	\$160,700
Median Rent	\$761	\$845

Source: U.S. Census Bureau^{26, 27}

Approximately 56% of residents in Kossuth County travel less than 15 minutes to work, while 16% travel more than 30 minutes, suggesting many residents live and work in somewhat close proximity. Major employers in the county include:

- Snap-on
- Kossuth Regional Health Center
- BrandFX
- Aluma
- Hormel
- Country Maid
- Welp
- School Districts
- Corteva

According to 2021 Business Patterns Census Data, Kossuth County had 554 business establishments. The following table presents the number of businesses, number of paid employees, and the annual payroll in thousands of dollars.

Table 25: Business in Kossuth County

	Total Businesses	Number of Paid Employees	Annual Payroll (in thousands)
Total For All Sectors	554	5,246	\$232,167

Source: U.S. Census Bureau²⁸

Agriculture is a main staple of Iowa's economy. Kossuth County's 1,347 farms cover 593,983 acres of land, which is about 95% of the county's total area. Crop and livestock production are the visible parts of the agricultural economy, but many related businesses contribute to agriculture by producing, processing, and marketing farm products. These businesses generate income, employment, and economic activity throughout the region.

26 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

27 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

28 United States Census Bureau. "2021 County Business Patterns." <https://data.census.gov/>.

Table 26: Agricultural Inventory

	Agricultural Inventory
Number of Farms with Harvested Cropland	1,014
Acres of Harvested Cropland	539,802

Source: USDA Census of Agriculture, 2017²⁹

Built Environment and Structural Inventory

Data related to the built environment is an important component of a hazard mitigation plan. It is essential that during the planning process communities and participating jurisdictions display an understanding of their built environment and work to identify needs that may exist within the county. The United States Census Bureau provides information related to housing units and potential areas of vulnerability. The selected characteristics examined below include lacking complete plumbing facilities; lacking complete kitchen facilities; no telephone service available; housing units that are mobile homes; housing units with no vehicles, and broadband access.

Table 27: Selected Housing Characteristics

	Kossuth County
Occupied Housing Units	6,422 (88.4%)
Lacking Complete Plumbing Facilities	0.1%
Lacking Complete Kitchen Facilities	1.2%
No Telephone Service Available	0.7%
No Vehicles Available	7.5%
Mobile Homes	0.5%
Broadband Access	81.1%

Source: U.S. Census Bureau³⁰

Less than one percent of housing units lack access to landline telephone service. This does not necessarily indicate that there is not a phone in the housing unit, as cellular telephones are increasingly a primary form of telephone service. However, this lack of access to landline telephone service does represent a population at increased risk to disaster impacts. Reverse 911 systems are designed to contact households via landline services and as a result, some homes in hazard prone areas may not receive notification of potential impacts in time to take protective actions. Emergency managers should continue to promote the registration of cell phone numbers with emergency alert systems and utilize systems which automatically ping cellphones by triangulating cell towers.

Internet or broadband access—through Wi-Fi or cellphone coverage—is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home. 81.1% of households in the county have a broadband internet subscription. Kossuth County has a smaller share of households with broadband (81.1%) compared to the state (84.9%).³¹

29 United States Department of Agriculture. "2017 Census of Agriculture." <https://www.nass.usda.gov/Publications/AgCensus/2017/>.

30 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

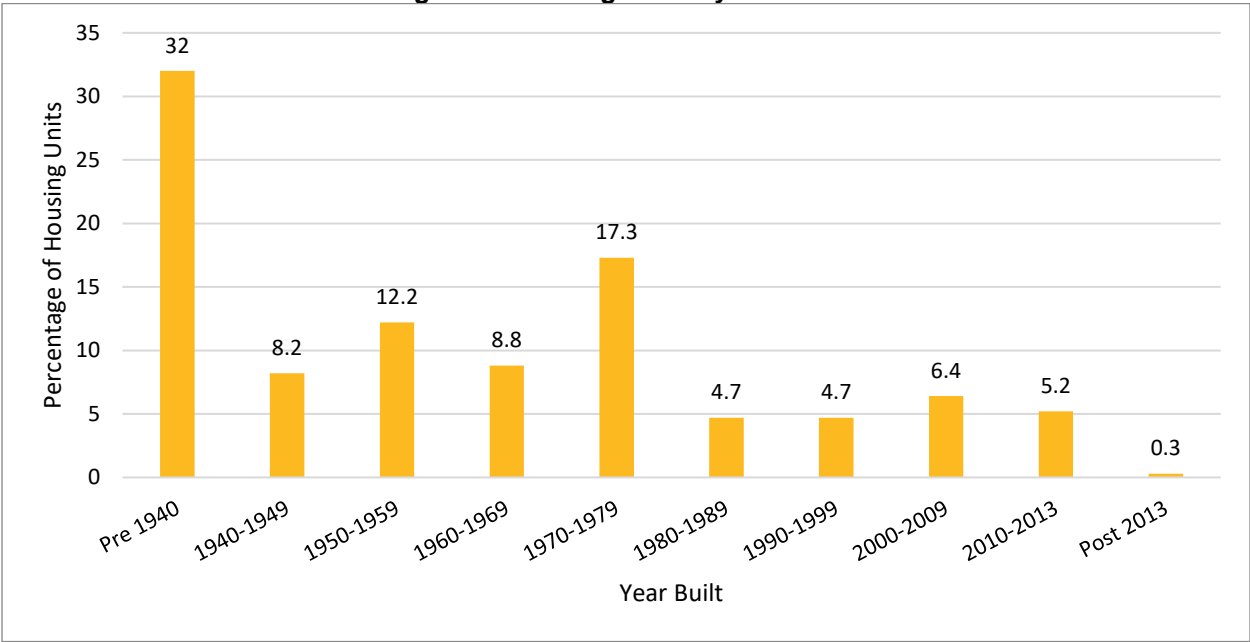
31 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

About one percent of housing units in the county are mobile homes. Mobile homes have a higher risk of sustaining damage during high wind events, tornadoes, severe thunderstorms, and severe winter storms. Mobile homes that are either not anchored or are anchored incorrectly can be overturned by 60 mph winds. A thunderstorm is classified as severe when wind speeds exceed 58 mph, placing improperly anchored mobile homes at risk.

Almost twelve percent of the homes in the county are unoccupied. Unoccupied homes may not be maintained as well as occupied housing, thus adding to their vulnerability. Also, about five percent of households in the county report no available vehicles. Households without vehicles may have difficulty evacuating during a hazardous event and a reduced ability to access resources in time of need.

The vast majority of homes in the county were built prior to 1970 (Figure 9). Housing age can serve as an indicator of risk, as structures built prior to state or local building codes being developed may be more vulnerable. According to the Department of Housing and Urban Development (HUD), older homes are at greater risk of poor repair and dilapidation resulting in blighted or substandard properties. Residents living in these homes maybe at higher risk to the impacts of high winds, tornadoes, severe winter storms, and thunderstorms.

Figure 9: Housing Units by Year Built



Source: U.S. Census Bureau³²

32 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov>.

Parcel Assessment and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of assessed properties at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Table 28: Assessed Parcels and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
9,079	\$1,349,180,635	620	\$96,442,510	7%

Source: County Assessor, 2023

Table 29: Assessed Parcels and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
9,079	\$1,349,180,635	574	\$98,297,726	6%

Source: County Assessor, 2023

Table 30: County Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000A	3/20/2018	Flood Insurance Study

Source: FEMA Flood Map Service Center³³

Future Development Trends

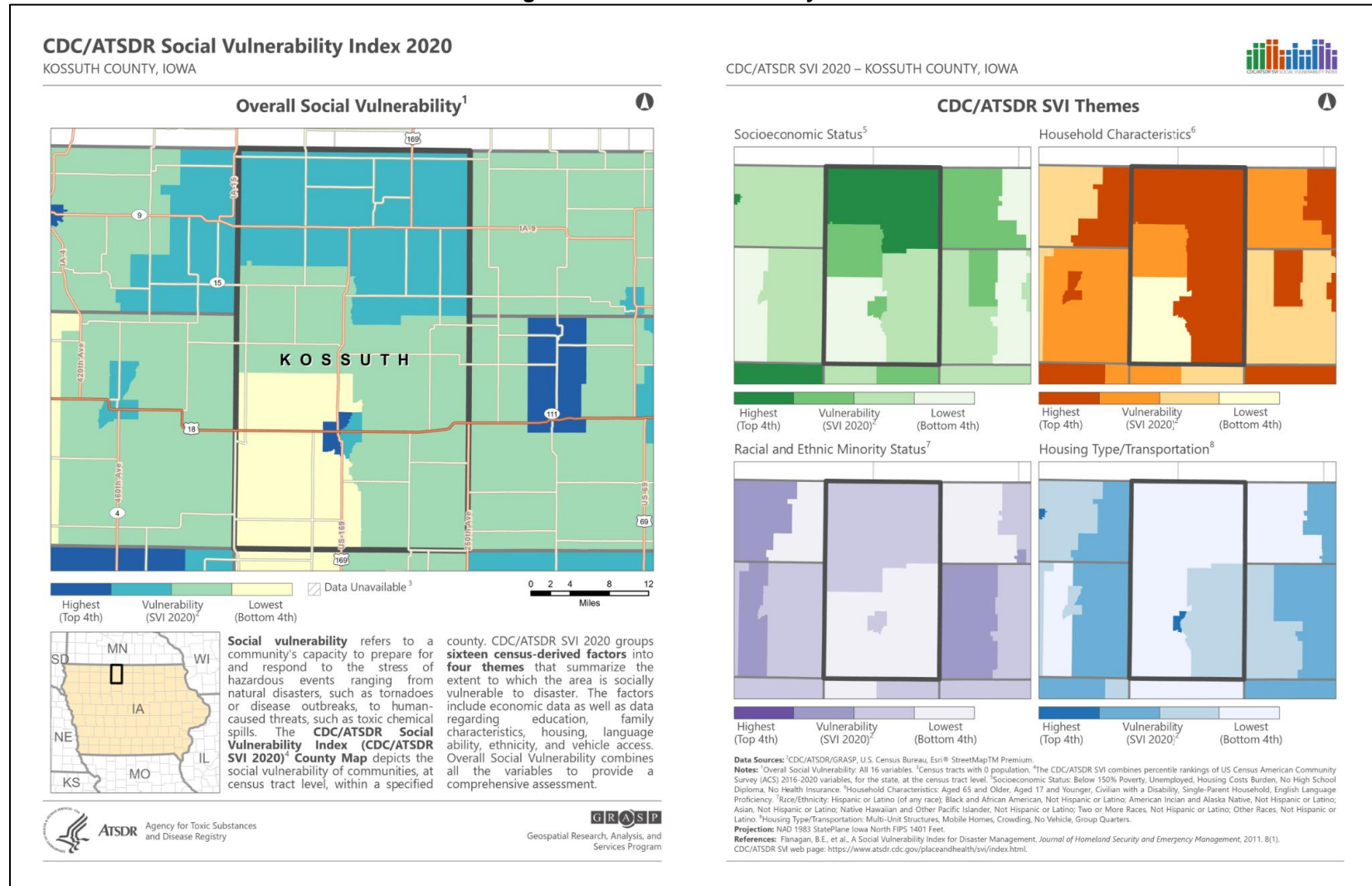
The future development trends discussed are specific to Kossuth County. For a discussion of trends within individual communities, see *Section Seven: Community Profiles*. In the last five years, the county purchased a building for the Emergency Management Agency to use for training, sheltering, and emergency operations center. In rural Kossuth County, there are currently no plans for future development. No development changes in rural Kossuth County have affected the county's overall vulnerability.

Social Vulnerability Index

All communities have some vulnerability to natural and man-made hazard events. Various social conditions such as poverty rates, vehicle access, language, or housing stock contribute to a community's overall social vulnerability. The Centers for Disease Control (CDC) has developed a Social Vulnerability Index to help public health officials and emergency responders identify communities at greater risk before, during, and after major hazardous events. The index evaluates 15 social factors and breaks down vulnerability into four domains: socioeconomic status; household composition and disability; minority status and language; housing and transportation.. Figure 10 illustrates the overall Social Vulnerability Index for Kossuth County.

33 Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

Figure 10: Social Vulnerability Index



Source: CDC Social Vulnerability Index, 2020³⁴

34 Centers for Disease Control Social Vulnerability Index. 2020. "CDC's Social Vulnerability Index (SVI): County Map" <https://svi.cdc.gov/prepared-county-maps.html>.

Community Lifelines

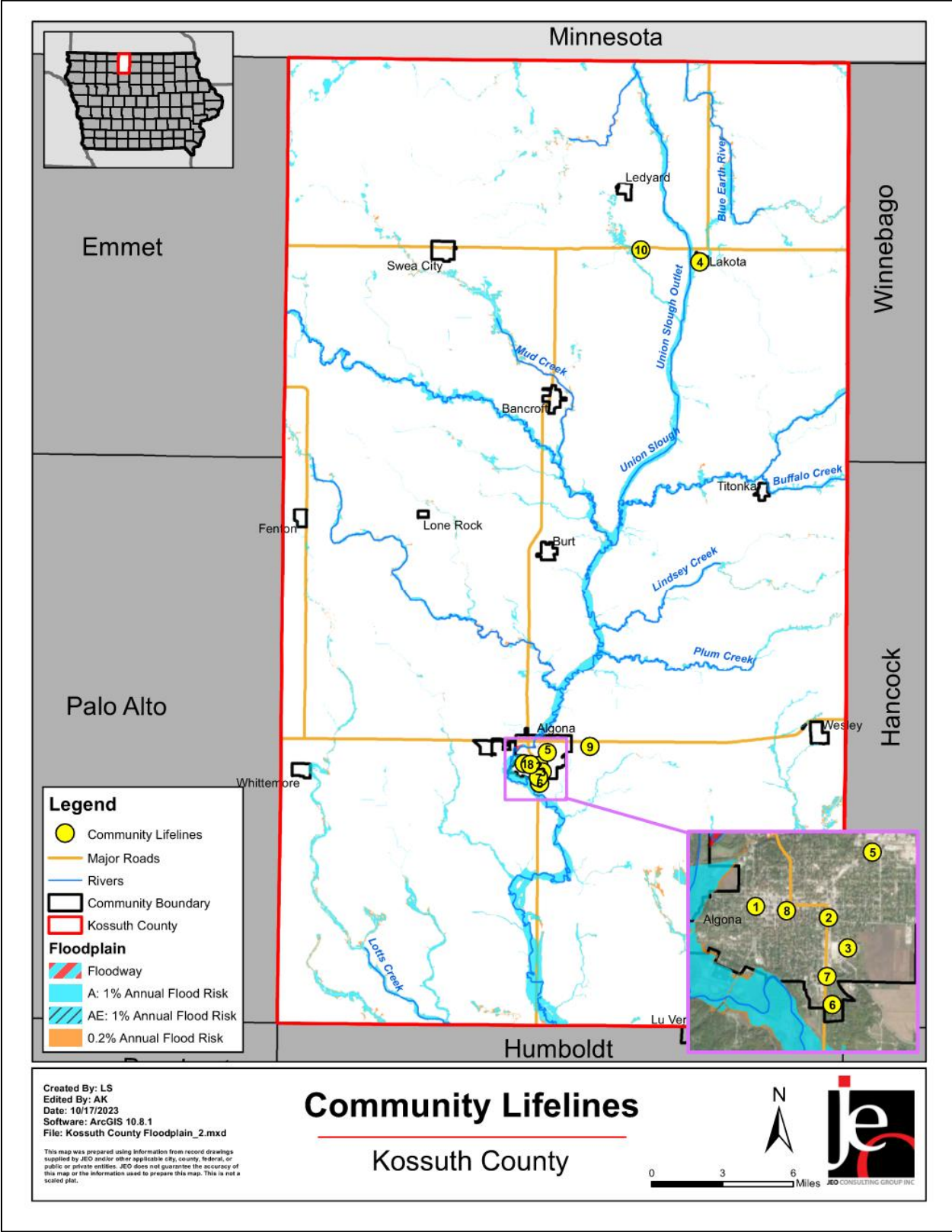
Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communication; Transportation; and Hazardous Material facilities.



Table 31: Community Lifelines

CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	Law Enforcement Center	Safety and Security	-	N
2	EMA Training & Response Building	Safety and Security	S	N
3	Algona Middle & High School	Other	S	N
4	Eagle Center	Food, Water, and Shelter	S	N
5	Food Pantry	Food, Water, and Shelter	-	N
6	Kossuth Regional Health Center	Health and Medical	G	N
7	School Bus Barn	Transportation	-	N
8	KLGA	Communication	-	N
9	Ethanol Plant	Hazardous Material	-	N
10	Valero	Hazardous Material	-	N

Figure 8: Map of Community Lifelines



Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors, as well as areas more at risk of transportation incidents. Kossuth County's major transportation corridors include US Highways 169 and 18, and State Highways 9, 15, and 17. Other routes of concern are East and West McGregor Street (County Road B40). The most traveled route is Highway 169, with an average of 7,500 vehicles daily.³⁵ A few railroad lines travel through the county. One Union Pacific line runs east-west through the county, while another runs north-south through the southern half. A third Union Pacific line runs through the very southwest corner of the county. Additionally, a Canadian Pacific line runs east-west through the southern part of the county.³⁶ The Algona Municipal Airport is the only public-use airport in the county.³⁷

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. There are several gas transmission and hazardous liquid pipelines that travel through the county and can be seen on the figure below.

35 Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

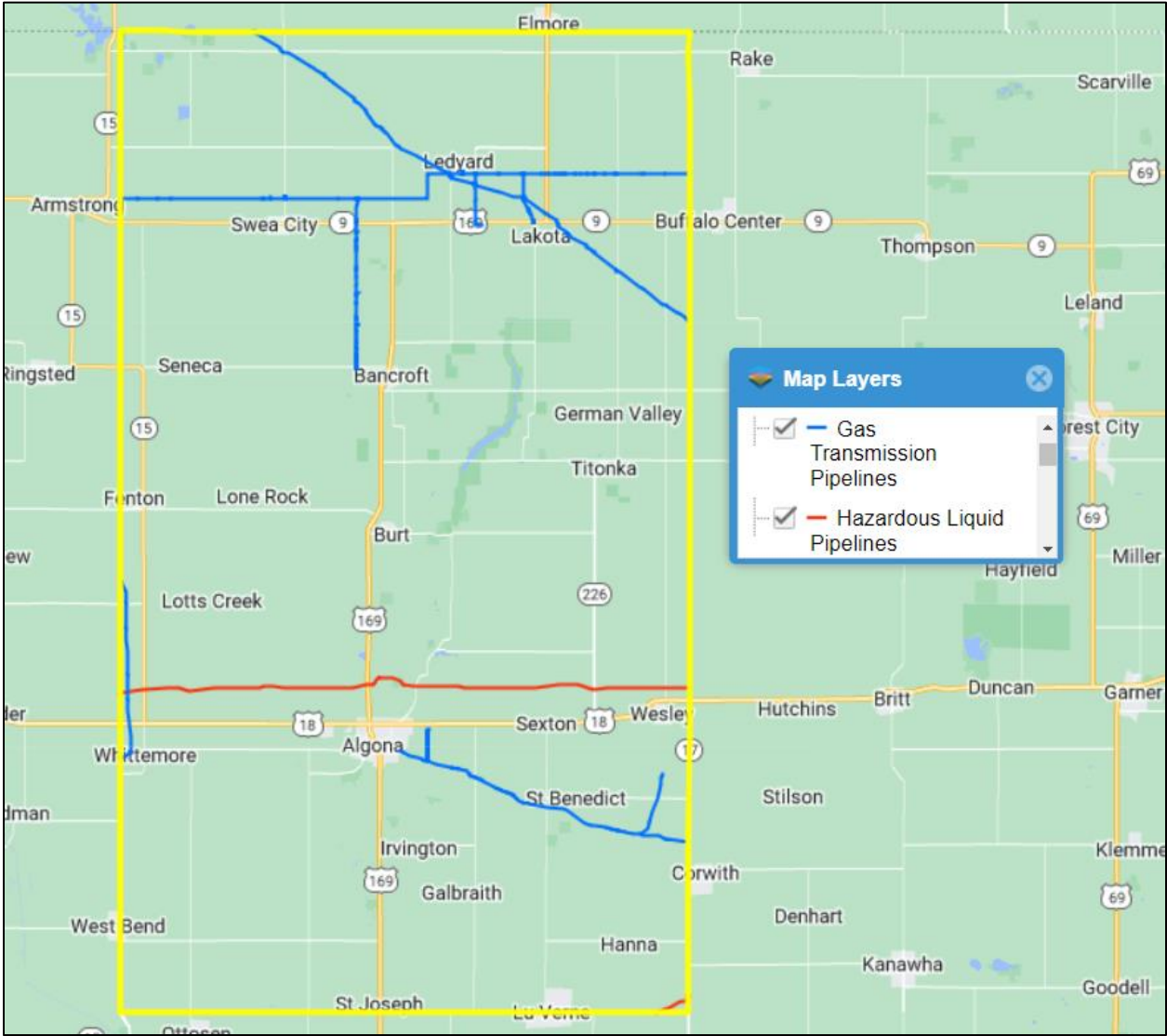
<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

36 Iowa Department of Transportation. 2021. "Iowa Railroads." Accessed May 2023.

<https://iowadot.gov/iowarail/railroads/maps/basemap.pdf>.

37 Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023. <https://iowadot.gov/aviation/airport-information>.

Figure 9: Pipelines in Kossuth County



Source: National Pipeline Mapping System³⁸

38 National Pipeline Mapping System. 2023. "Public Viewer." Accessed July 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

According to the Tier II System reports submitted to the Iowa Department of Natural Resources and local planning team, there are 60 chemical storage sites within Kossuth County which house hazardous materials.

Table 32: Chemical Storage Lifelines

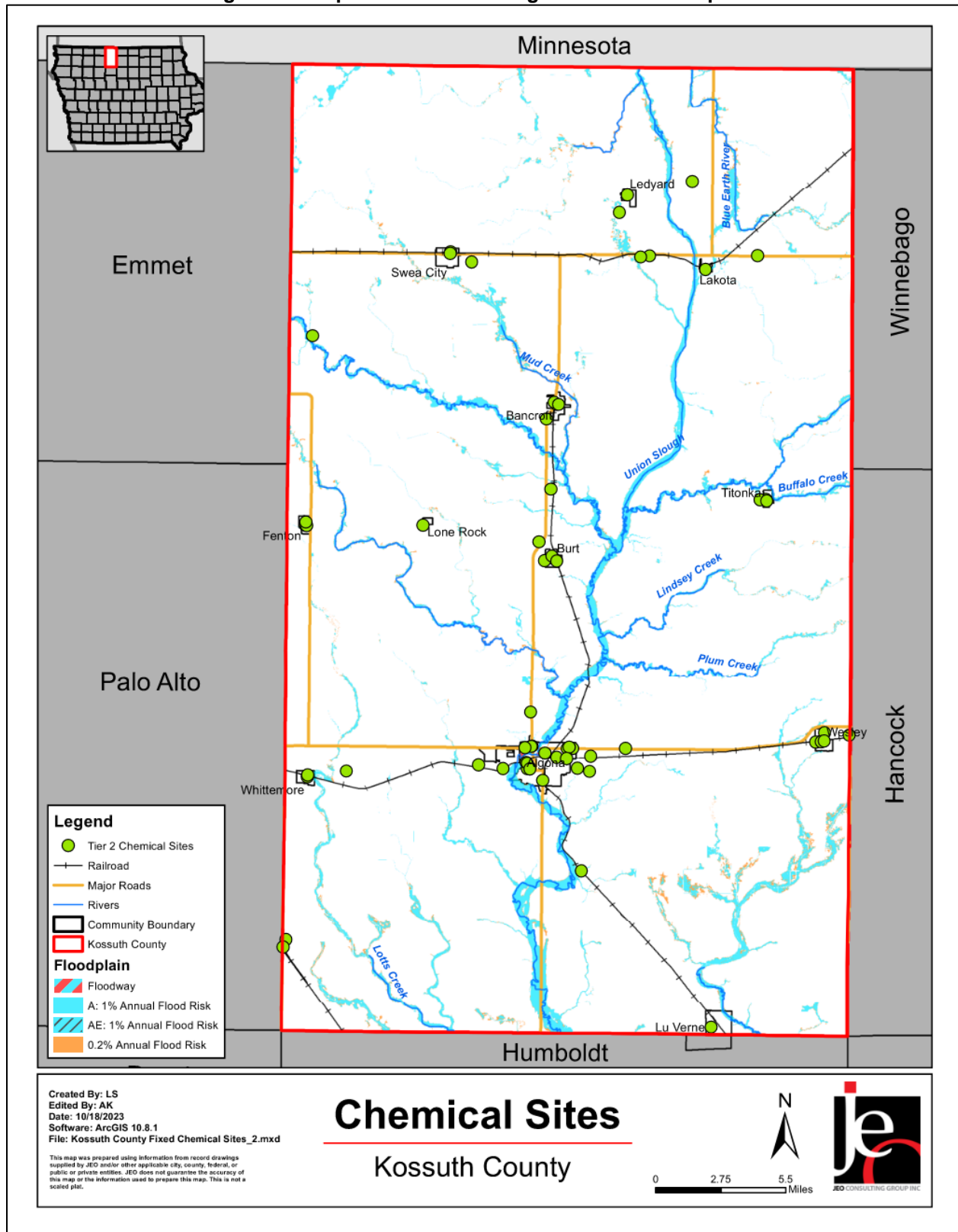
Facility Name	Address
Ag Processing Inc.- Algona	2108 140th Avenue, Algona
Air Products CO2 facility at Valero	1604 428th Street, Lakota
Albion Laboratories Inc./Balchem Corp.	515 W. Broad Street, Whittemore
Algona Bulk Plant	2224 Hwy 169 North, Algona
Algona Classic Stop	703 S. Phillips St, Algona
Algona Municipal Utilities Comm Bldg	12 E North Street, Algona
Algona Municipal Utilities East Substation	820 North Finn Drive, Algona
Algona Municipal Utilities Power Plant	521 N Hall Street, Algona
Algona Municipal Utilities Water Treatment Plant	201 N Hall Street, Algona
Algona Municipal Utilities West Substation	601 N Williams Street, Algona
BrandFX LLC	105 4th Ave, Swea City
Burt Classic Stop	802 E Walnut St, Burt
Burt LP Plant	3009 310th Street, Burt
Burt Water Department	111 Beech St., Burt
CCM Algona Plant	412 Hwy 18 W. Algona
CenturyLink - Algona CO	21 E Call Street, Algona
CenturyLink - Wesley CDO	Main & 3rd Street, Wesley
Farmers Coop Elevator	833 South Phillips St., Algona
Fenton LP Plant	609 Maple St, Fenton
Fenton Water Plant	305 2nd St., Fenton
Flint Hills Resources Pine Bend, LLC - Algona Facility	832 N Main Street, Algona
Gold-Eagle Cooperative, Titonka Facility - #14591	57 Elevator Avenue, Titonka
Gold-Eagle Cooperative, Wesley Facility - #11490	106 West Main Street, Wesley
Iowa DOT Algona Maintenance Garage	2107 100th Avenue, Algona
Iowa DOT Swea City Maintenance Garage	806 Hwy 9, Swea City
ITC Bison	2207 460th Street, Lakota
ITC Midwest Armstrong	3804 20th Avenue, Armstrong
ITC Midwest Kossuth	1502 US-18 Highway, Algona
ITC Midwest Ledyard	1803 460th Street, Ledyard
K.C. Nielsen Ltd - Titonka Iowa	2120 330th St, Titonka
K.C. Nielsen Ltd Algona	2613 US-18, Algona
KC Nielsen - West Bend	5 135th St, West Bend
Lakota Bulk Plant	416 3rd Street, Lakota
Luverne Propane Plant	310 S 4th Street, Lu Verne
New Cooperative - Whittemore	502 Railroad Street, Whittemore
New Cooperative - Bancroft LP	302 N. Long St, Bancroft
New Cooperative – West Bend	12 1 st Avenue SE, West Bend
New Cooperative, Inc., Algona	2106 140th Avenue, Algona
New Cooperative, Inc., C-Store Whittemore	215 4th Street, Whittemore
Nutrien Ag Solutions 426	109 Linn Street, Lu Verne
Nutrien Ag Solutions 6017	121 East Street, Lu Verne
Pioneer Hibred Int Inc	1901 Hwy 169 North, Algona
Precision Pulley and Idler - Stainless	1615 E. Poplar St, Algona

Facility Name	Address
Smithfield Hog Production - Feed Mill	2120 90th Avenue, Algona
Snap-on Tools Manufacturing Company	2600 U.S. Highway 18 E, Algona
Standard Nutrition Company	3604 Hwy S 169, Bancroft
StateLine Cooperative - Bancroft Facility	142 North Long Street, Bancroft
StateLine Cooperative - Fenton Facility	809 Maple Street, Fenton
StateLine Cooperative - Lakota Facility	1906 9 Highway, Lakota
StateLine Cooperative - Ledyard Agronomy Facility	4403 15th Avenue, Ledyard
StateLine Cooperative - Ledyard Fuel	121 Edmunds Street, Ledyard
StateLine Cooperative - Lone Rock Facility	105 Main Street, Lone Rock
StateLine Cooperative - North Burt Facility	1201 330th Street, Burt
StateLine Cooperative - South Burt Facility	102 Walnut Street, Burt
Titonka Cardtrol - NuWay-K&H Cooperative	23 Main Street North, Titonka
Valero Lakota Plant	1660 428th Street, Lakota
Wesley Classic Stop - NuWay-K&H Cooperative	100 3rd Street South, Wesley
Wesley East LP Plant Stop - NuWay-K&H Cooperative	2209 Ames Ave, Wesley
Wesley In Town LP Plant Stop - NuWay-K&H Cooperative	705 West Main Street, Wesley
Wesley Office Stop - NuWay-K&H Cooperative	302 West Main Street, Wesley

Source: E-Plan³⁹

39 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure 11: Map of Chemical Storage Sites and Floodplain



State and Federally Owned Properties

The following table provides an inventory of state and federally owned properties within the county. Note that this list does not include federally or state-owned highway systems or specific buildings within each community.

Table 33: State and Federally Owned Facilities and Lands

Site Name	Nearest Community
Ambrose A. Call State Park	Algona
Burt Lake Wildlife Management Area	Armstrong
East Fork Des Moines River Wildlife Management Area	Algona
Goose Lake Wildlife Management Area	Armstrong
Iowa Lake Marsh Wildlife Management Area	Armstrong
Seneca Access Wildlife Management Area	Armstrong
Stateline Marsh Wildlife Management Area	Armstrong
Union Slough National Wildlife Refuge	Titonka
Various Waterfowl Production Areas	-

Source: Iowa Department of Natural Resources,^{40 41} U.S. National Park Service,⁴² U.S. Fish & Wildlife Service⁴³

Historic Sites

According to the National Register of Historic Places for Iowa by the National Park Service, there are six historic sites located in the county. Structures identified as cultural or historic resources represent assets that are unique to the county and are, in many situations, irreplaceable and have local significance.

Table 34: Historic Sites

Site Name	Date Listed	Nearest Community	In Floodplain?
Algona Junior and Senior High School Building and High School Building Annex	12/10/2014	Algona	No
Dau, William C. and Hertha, House	7/29/1993	Algona	No
Des Moines River Bridge	5/15/1998	Swea City	Yes
G.A.R. Memorial Hall	1/15/2014	Algona	No
Land and Loan Office Building	3/19/1998	Algona	No
Lu Verne City Jail	12/18/1992	Lu Verne	No

Source: National Park Service⁴⁴

Historical Occurrences

The following table provides a statistical summary for hazards that have occurred in the county. The property damages from the NCEI Storm Events Database (1996 through 2022) should be

40 Iowa Department of Natural Resources. 2023. "Wildlife Management Areas." <https://www.iowadnr.gov/hunting/places-to-hunt-shoot/wildlife-management-areas#13254117-t---w>

41 Iowa Department of Natural Resources. 2023. "State Parks." <https://www.iowadnr.gov/Places-to-Go/State-Parks>.

42 National Park Service. 2023. "Find a Park: Iowa." <https://www.nps.gov/state/ia/index.htm>.

43 U.S. Fish & Wildlife Service. 2023. "Iowa Wetland Management District." <https://www.fws.gov/refuge/iowa-wetland-management-district>.

44 National Park Service. 2023. "National Register of Historic Places: Data Downloads." [datafile]. <https://www.nps.gov/subjects/nationalregister/data-downloads.htm>.

Section Three | County Profile

considered only as broad estimates. Crop damages reports come from the USDA Risk Management Agency for Kossuth County between 2000 and 2022.

Table 35: County Hazard Loss History

Hazard Type		Count	Property	Crop ¹
Animal and Plant Disease	Animal Disease ¹⁵	1	N/A	N/A
	Plant Disease ¹	16	N/A	\$55,979
Dam Failure ²		0	-	N/A
Drought ^{3,6}		423/1,540 months	\$12,650,000	\$29,485,242
Earthquake ⁴		0	-	-
Extreme Temperatures ⁵	Cold (Max Temp ≤10°F)	Avg 9 days per year	N/A	\$12,905
	Heat (Max Temp ≥100°F)	Avg 1 day per year	N/A	\$674,569
Flooding ⁶	Flash Flood	22	\$1,280,000	\$207,267
	Flood	59	\$3,709,500	
Grass and Wildland Fire ⁷		22	125 acres	N/A
Hazardous Materials Release	Fixed Site ⁸	7	\$0	N/A
	Transportation ⁹	8	\$421,171	N/A
Human Infectious Diseases ¹⁴ <i>101 deaths (Covid)</i>		4,384 Covid cases	N/A	N/A
Infrastructure Failure		Unknown	N/A	N/A
Severe Thunderstorms ⁶	Hail	145	\$617,000	\$92,341,400
	Heavy Rain	47	\$0	
	Lightning	3	\$14,000	
	Thunderstorm Wind	130	\$3,062,000	
Severe Winter Storms ⁶	Blizzard	36	\$575,000	\$1,923,836
	Heavy Snow	21	\$389,545	
	Ice Storm	14	\$226,280	
	Winter Storm	37	\$590,900	
	Winter Weather	1	\$0	
Terrorism and Civil Unrest ¹⁰		0	-	N/A
Tornado and Windstorm ⁶	Tornadoes: Mode: EF0 Range: EF0-EF2	14	\$1,393,000	\$32,815
	Windstorms: Average: 56 mph Range: 40-70 mph	47	\$1,660,740	\$4,335,102
Transportation Incident	Auto ¹¹ <i>414 injuries, 18 deaths</i>	1,566	\$17,087,284	N/A
	Aviation ¹² <i>5 injuries, 5 deaths</i>	24	N/A	N/A
	Rail ¹³ <i>16 injuries, 4 deaths</i>	36	\$346,980	N/A
Total		2,256	\$31,373,400	\$129,069,114

N/A: Data not available

1 USDA RMA, 2000 - 2022

2 IDNR Communication, 2023

3 NOAA, 1895 - March 2023

4 USGS, 1900 - May 2023

5 NOAA Regional Climate Center, 1939 - 2022

6 NCEI, 1996 - 2022

7 IDNR, 2008 - 2023

8 NRC, 1990 - 2022

9 PHMSA 1971 - April 2023

10 University of Maryland, 1970 - 2018

11 IDOT, 2013 - April 2023

12 NTSB, 1962 - May 2023

13 FRA, 1975 - 2022

14 The New York Times, as of 3/23/2023

15 IDALS, 2022

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in Table 35.

The hazards discussed in detail below were prioritized by the county planning team based on historical hazard occurrences, potential impacts, and the county's capabilities.

Animal and Plant Disease

The planning team prioritized this hazard due to past outbreaks, such as the avian influenza in 2022, and the potential for other outbreaks of influenza and porcine reproductive and respiratory syndrome (PRRS). The team is concerned about adverse impacts to the agricultural community and economy as well as transportation impacts. Projects needed in the future to reduce risk include education and improved monitoring of livestock transportation. Educational materials for animal and plant disease in the area are typically provided by Iowa DNR, IDALS, USDA, Emergency Management, Public Health, and private industry.

Drought

Drought was prioritized by the planning team due to the heavy impacts it can cause. As a result of drought, the county has experienced a decrease in crops/revenues; lower water tables; decreased water in streams, rivers, and lakes; and reduction in recreational opportunities. Water supply is monitored by various agencies including city utilities, DNR, Conservation, and Emergency Management.

Water supply for fire departments has been limited in the past for controlled burns. The river levels have been so low that water cannot be pumped from them, if needed. Alternative water sources may be required in the future.

Flooding

The planning team expressed concern that it does not have adequate radar to give people prompt warnings of coming storm events. Past impacts include transportation-related road closures for road repair and small culverts that wash out. Flooding has had minor to moderate impact on crops and a minor impact on drainage infrastructure. Some critical facilities have weather radios, including Kossuth County Regional Health Center, the Law Enforcement Center, County

Courthouse, schools, and long term care facilities. A project is needed to improve weather radar coverage.

Hazardous Materials Release

The county is concerned about this hazard due to the amount of hazardous material transported across the county and due to the number of facilities that store hazardous materials. Past events include a chlorine leak in Bancroft in 2023 and a natural gas release in Algona in 2022. According to the planning team, all the hazardous materials facilities should have their own plans to mitigate a release event. Increased education about hazardous materials and response protocol is needed to reduce the risk to this hazard.

In the event of a large spill the local fire district would respond. The districts have the training but not the proper equipment to clean up a spill. Regional HazMat from Mason City would respond for cleanup as they have the resources and specialized training. The planning team indicated that vulnerable populations are located near chemical sites and major transportation routes. These include a school and nursing home. Businesses and apartment buildings are located near chemical sites, a railroad, and a natural gas pipeline.

Human Infectious Diseases

The planning team selected this hazard as being of top concern due to the recent COVID pandemic, the significant population of older people, the shortage of employees, the potential for medical response becoming overwhelmed, and the potential impact on the local economy. To reduce the risk to this hazard, the county completed plans to better protect staff and the public from infectious disease and acquired additional PPE.

Severe Thunderstorms (includes Hail & Lightning)

Recent severe thunderstorm events include a storm with hail in the West Bend area on May 8, 2023, and in Swea City area on July 15, 2023. Some impacts the county has experienced in the past from severe thunderstorms include hail damage, downed power lines, tree damage, crop damage, warning siren damage, and minor home/outbuilding damage. A fire also broke out at an ethanol plant due to a power outage from a severe thunderstorm. The planning team expressed concern that it does not have adequate radar to give people prompt warnings of coming storm events. A project is needed to improve weather radar coverage.

Severe Winter Storms

A recent storm event highlighted by the planning team was a blizzard on December 20, 2022. The county has experienced various impacts from severe winter storms, such as travel/transportation impacts (stranded vehicles and emergency response delays), power outages. The planning team expressed concern that it does not have adequate radar to give people prompt warnings of coming storm events. A project is needed to improve weather radar coverage. Backup generators are needed at multiple critical facilities.

Tornado and Windstorm

The county experienced a derecho event on December 15, 2021. Past impacts include downed trees, power outages, crop damage, and damage to homes. The planning team expressed concern that it does not have adequate radar to give people prompt warnings of coming storm events. A project is needed to improve weather radar coverage. Storm shelters are located at the courthouse, annex, nature center, law enforcement center, and Kossuth County Regional Hospital. Siems Park and Smith Lake recreation area only have concrete bathrooms for sheltering in a tornado or windstorm event.

Mitigation Strategy

Completed Mitigation and Strategic Actions

Mitigation Action	Amend Floodplain Regulations to Remain in NFIP
Description	Recently, FEMA and IDNR completed an update to the Kossuth County flood insurance rate maps (FIRMs). To maintain good standing with the NFIP, the county must amend floodplain regulations to reference the effective date of the new maps, which is 3/20/2018.
Hazard(s)	Flooding
Status	The updated FIRM was added to the county floodplain regulations and adopted in 2018.

Continued Mitigation and Strategic Actions

Mitigation Action	Drought Management Plan
Description	Develop a drought management/emergency plan with partners. Include criteria/triggers, communication plan & early warning, and identifying secondary water sources.
Hazard(s)	Drought
Estimated Cost	\$5,000+
Local Funding Source	County General Fund
Timeline	2-5 years
Priority	High
Lead Agency/Department	County Emergency Management Agency (EMA)
Status	In progress

Mitigation Action	Continuity of Operations Plan (COOP)
Description	Develop a Continuity of Operations Plan to use during a disaster that provides a means to continue operations, who is in charge, where to set up control and command, etc.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	County General Fund
Timeline	2-5 years
Priority	High
Lead Agency/Department	EMA
Status	In progress

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	County General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA
Status	In progress

Mitigation Action	Emergency Response Training
Description	Conduct training for emergency response personnel
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000
Local Funding Source	County General Fund
Timeline	5+ years
Priority	Medium
Lead Agency/Department	EMA
Status	Response training occurs on a regular basis.

Mitigation Action	Safe Rooms
Description	Construct or retrofit existing structures into public safe rooms at government facilities, recreational facilities, recreational areas, manufactured home parks, schools, childcare centers, and other critical facilities.
Hazard(s)	Tornado and Windstorm, Severe Thunderstorms, Severe Winter Storms
Estimated Cost	\$250,000+
Local Funding Source	County General Fund
Timeline	5+ years
Priority	Medium
Lead Agency/Department	EMA
Status	Early planning stages

Mitigation Action	Stormwater System and Drainage Improvements
Description	Drainage improvements may include ditch upsizing, ditch cleanout, and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates. Cleanout and reshaping of channel segments at bridge crossings can increase conveyance and reduce flooding potential.
Hazard(s)	Flooding, Infrastructure Failure
Estimated Cost	\$100,000+
Local Funding Source	County General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA
Status	The county is re-evaluating which improvements are needed. There is a lack of resources to implement at this time.

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000
Local Funding Source	County General Fund
Timeline	5+ years
Priority	Medium
Lead Agency/Department	EMA
Status	Early planning stages. Some prioritized locations have been identified. There is a lack of resources to implement at this time.

Mitigation Action	Enhance Security Measures
Description	Install and maintain security measures at all critical facilities.
Hazard(s)	Terrorism and Civil Unrest
Estimated Cost	\$50,000+
Local Funding Source	County General Fund
Timeline	2-5 years
Priority	High
Lead Agency/Department	EMA
Status	Some security measures have been implemented. Will need to re-evaluate and adapt to enhance measures currently in place. There is a lack of funding to implement at this time.

Mitigation Action	Promote Resiliency Through Codes and Regulations
Description	Develop and promote comprehensive, cost-effective, common-sense recommendations for adoption and enforcement of land use, ordinances and regulations, zoning, and building codes that decrease risk in areas susceptible to hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000
Local Funding Source	County General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	EMA
Status	In progress

Removed Mitigation and Strategic Actions

Mitigation Action	Wastewater System Improvements
Description	Construct, retrofit, or maintain wastewater infrastructure to ensure its proper functioning.
Hazard(s)	Flooding, Infrastructure Failure
Reason for Removal	This is better suited for city governments than at the county level.

Mitigation Action	Flood-prone Property Acquisition
Description	Acquire flood prone properties for conversion into green space; or elevate structures to or above base flood elevation.
Hazard(s)	Flooding
Reason for Removal	No longer a priority for the county

Mitigation Action	Flood Protection
Description	Construct levees, dams, and/or culverts to ensure adequate capacity and protection levels for property and critical facilities.
Hazard(s)	Flooding
Reason for Removal	No longer a priority for the county

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The county planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the Kossuth County Board of Supervisors, Kossuth County Emergency Management, and the Kossuth County Engineer. The plan will be reviewed and updated annually. The public will be involved in the review and revision process through social media and postings on the county website.

Section Four: Risk Assessment

Introduction

The ultimate purpose of this hazard mitigation plan is to minimize the loss of life and property across the county due to natural or human-caused hazards. This section contains a county and local risk assessment including descriptions of potential hazards, vulnerabilities and exposures, probability of future occurrences, and potential impacts and losses. By conducting a county and local risk assessment, participating jurisdictions can develop specific strategies to address areas of concern identified through this process. The following table defines terms that will be used throughout this section of the plan.

Table 36: Term Definitions

Term	Definition
Hazard	A potential source of injury, death, or damages
Asset	People, structures, facilities, and systems that have value to the community
Risk	The potential for damages, loss, or other impacts created by the interaction of hazards and assets
Vulnerability	Susceptibility to injury, death, or damages to a specific hazard
Impact	The consequence or effect of a hazard on the community or assets
Historical Occurrence	The number of hazard events reported during a defined period of time
Extent	The strength or magnitude relative to a specific hazard
Probability	Likelihood of a hazard occurring in the future

Methodology

The risk assessment methodology utilized for this plan follows the same methodology as outlined in the FEMA Local Mitigation Planning Handbook. This process consists of five primary steps:

1. Identify hazards.
2. Describe hazards.
3. Identify community assets.
4. Analyze impacts.
5. Summarize vulnerability.

When identifying and describing the hazard, this plan will examine the following items: previous occurrences of the hazard within the county; locations where the hazard has occurred in the past or is likely to occur in the future; extent of past events and likely extent for future occurrences; and probability of future occurrences. While the identification of vulnerable assets will be conducted across the entire county, *Section Seven* will discuss community-specific assets at risk to relevant hazards. Analysis of regional risk will examine historic impacts and losses and what is possible should the hazard occur in the future. Impact analysis will include both qualitative (i.e., description of historic or potential impacts) and quantitative data (i.e., assigning values and measurements for potential loss of assets). Finally, each hazard identified in the plan will include a summary statement encapsulating the risk and vulnerability information provided during each of the previous steps of the risk assessment process.

For each of the hazards profiled, the best available and most appropriate data available have been considered. Further discussion relative to each hazard is discussed in the hazard profile portion of this section.

Requirement §201.6(c)(2): Risk assessment. The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

Requirement §201.6(c)(2)(i): The risk assessment shall include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Requirement §201.6(c)(2)(ii): The risk assessment shall include a description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. The plan must also address National Flood Insurance Program insured structures that have been repetitively damaged by floods.

Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area.

Requirement §201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

Average Annual Damages and Frequency

FEMA *Requirement §201.6(c)(2)(ii) (B)* suggests that when the appropriate data is available, hazard mitigation plans should also provide an estimate of potential dollar losses for structures in vulnerable areas. This risk assessment methodology includes an overview of assets at risk and provides historical average annual dollar losses for all hazards for which historical event data are available. Additional loss estimates are provided separately for those hazards for which sufficient data is available. These estimates can be found within the relevant hazard profiles.

Average annual losses from historical occurrences can be calculated for those hazards which there is a robust historical record and for which monetary damages are recorded. There are three main pieces of data used throughout this formula.

- **Total Damages in Dollars:** This is the total dollar amount of all property damages and crop damages as recorded in federal, state, and local data sources. The limitation to these data sources is that dollar figures usually are estimates and often do not include all damages from every event, but only officially recorded damages from reported events.
- **Total Years of Record:** This is the span of years there are data available for recorded events. During this planning process, vetted and cleaned NCEI data are available for 1996 to 2022. Although some data are available back to 1950, this plan update only utilizes the more current and more accurate data available. Other periods of record for data sets are supplied where appropriate.

- **Number of Hazard Events:** This shows how often an event occurs. The frequency of a hazard event will affect how a community responds. A thunderstorm may not cause much damage each time, but multiple storms can have an incremental effect on housing and utilities. In contrast, a rare tornado can have a widespread effect on a community.

An example of the event damage estimate is found below:

$$\text{Annual Damages (\$)} = \frac{\text{Total Damages in Dollars (\$)}}{\text{Total Years of Record (\#)}}$$

It should be noted that NCEI data is not all-inclusive, and the database provides limited information on crop losses. To provide a better picture of the crop losses associated with the hazards within the county, crop loss information provided by the Risk Management Agency (RMA) of the USDA was used. The collected data are from 2000 to 2022. Data for all the hazards are not always available, so only those with an available dataset are included in the loss estimation.

Annual probability can be calculated based on the total years of record and the total number of years in which an event occurred. An example of the annual probability estimate is found below:

$$\text{Annual Probability (\%)} = \frac{\text{Total Years with an Event Occuring (\#)}}{\text{Total Years of Record (\#)}} \times 100$$

FEMA Standard Economic Values

As part of FEMA's Benefit-Cost Analysis Toolkit, standard economic values were developed to better estimate the avoided loss of services when implementing a hazard mitigation project. These standard economic values can also be used to help estimate potential future economic impacts from a hazard event. Table 37 shows the economic value for traffic delays on roads and bridges, loss of electric services, loss of wastewater services, loss of potable water services, and loss of communications/IT services. The assumed damages do not consider physical damage to utility equipment and infrastructure but do consider the impact on economic activity and impact on residential customers.

Table 37: FEMA Standard Economic Values

Service Lost	Economic Value
Traffic Delays on Roads and Bridges	\$37.49/Vehicle/Hour
Loss of Electric Services	\$199/Person/Day
Loss of Wastewater Services	\$66/Person/Day
Loss of Potable Water Services	\$138/Person/Day
Loss of Communications/IT Services	\$141/Person/Day

Source: FEMA, 2023⁴⁵

Also included in FEMA's Benefit-Cost Analysis Toolkit are life safety economic values. Life safety is the value of lives saved and injuries prevented resulting from mitigation measures. Table 38 shows the six different severity levels, their economic value, and common injuries associated with each level.

45 FEMA. 2023. "Benefit-Cost Analysis Sustainment and Enhancement".

https://www.fema.gov/sites/default/files/documents/fema_standard-economic-values-methodology-report_2023.pdf.

Table 38: FEMA Life Safety Economic Values (2022 Dollars)

Injury Severity Level	Selected Common Injuries	Economic Value
Minor	Superficial abrasion or laceration of skin; digit sprain; first degree burn; head trauma with headache or dizziness (no other neurological signs).	\$38,000
Moderate	Major abrasion or laceration of skin; cerebral concussion (unconscious less than 15 minutes); finger or toe crush/amputation; closed pelvic fracture with or without dislocation.	\$588,000
Serious	Major nerve laceration; multiple rib fracture (but without flail chest); abdominal organ contusion; hand, foot, or arm crush/amputation.	\$1,313,000
Severe	Spleen rupture; leg crush; chest-wall perforation; cerebral concussion with other neurological signs (unconscious less than 24 hours).	\$3,325,000
Critical	Spinal cord injury (with cord transection); extensive second- or third- degree burns; cerebral concussion with severe neurological signs (unconscious more than 24 hours).	\$7,413,000
Un-Survivable	Injuries, which although not fatal within the first 30 days after an accident, ultimately result in death.	\$12,500,000

Source: FEMA, 2023⁴⁶

FEMA's standard economic values and life safety economic values will not be used to determine average annual damages and average damage per event estimates for each hazard profile. Past hazard events do not list the total number of people or vehicles impacted, and thus it is impossible to retroactively calculate the total economic impact using these values. While injuries and fatalities may be reported it is not known the severity of those injured during the event. The values are provided in this plan so that participants can better estimate potential losses and determine the benefits of potential future mitigation actions.

Hazard Identification

The identification of relevant hazards for the county began with a review of the 2018 State of Iowa Hazard Mitigation Plan. Kossuth County representatives and key contacts reviewed, discussed, and determined the list of hazards to be profiled in this HMP update at the Kick-off Meeting. The hazards for which a risk assessment was completed are included in the following table.

46 FEMA. 2023. "Benefit-Cost Analysis Sustainment and Enhancement".

https://www.fema.gov/sites/default/files/documents/fema_standard-economic-values-methodology-report_2023.pdf.

Table 39: Hazards Addressed in the Plan

Hazards Addressed in the Plan		
Animal and Plant Disease	Flooding	Severe Thunderstorms (includes Hail and Lightning)
Dam Failure	Grass and Wildland Fire	Severe Winter Storms
Drought	Hazardous Materials Release	Terrorism and Civil Unrest
Earthquake	Human Infectious Diseases	Tornado and Windstorm
Extreme Temperatures	Infrastructure Failure	Transportation Incident

Hazard Changes

Apart from expansive soils, landslide, levee failure, and sinkholes, all hazards from the State HMP were included in this Hazard Mitigation Plan. However, some were combined due to their similarity of risks, impacts and mitigation strategies. These combined hazards are listed below.

- **Extreme Temperatures:** This hazard includes both Extreme Heat and Extreme Cold. Extreme Cold is included here, rather than with Severe Winter Storms.
- **Hazardous Materials Release:** This includes both Hazardous Materials and Radiological.

Hazard Assessment Summary Tables

The following table provides an overview of the data contained in the hazard profiles. The hazards listed in this table and throughout the section are in alphabetical order. This table is intended to be a quick reference for people using the plan and does not contain source information. Source information and full discussion of individual hazards are included later in this section. Annual probability is based off the number of years that had at least one event.

Table 40: Regional Risk Assessment

Hazard	Previous Occurrences	Approximate Annual Probability*	Likely Extent
Animal and Plant Disease	Animal Disease: 1	N/A	Unknown
	Plant Disease: 16	Plant Disease 12/23 = 52%	Crop damage or loss
Dam Failure	0	Less than 1%	Varies by structure
Drought	423/1,540 months	27%	D1-D4
Earthquake	0	Less than 1%	Less than 5.0 on the Richter Scale
Extreme Temperatures	Cold: Avg 9 days/year	85/130 = 65%	Max Temp $\leq 10^{\circ}\text{F}$
	Heat: Avg 1 day/year	24/130 = 18%	Max Temp $\geq 100^{\circ}\text{F}$
Flooding	81	18/27 = 67%	Some inundation of structures. Some evacuations of people may be necessary.
Grass/Wildfire	22	5/15 = 33%	Avg 6 acres Some homes and structures threatened or at risk

Hazard	Previous Occurrences	Approximate Annual Probability*	Likely Extent
Hazardous Materials Release	Fixed Site Spill: 7	6/33 = 18%	Avg Liquid Spill: 6 gal. Avg Gas Spill: 29 lbs.
	Transportation Spill: 8	7/53 = 13%	Avg Liquid Spill: 305 gal. Avg Gas Spill: 41 gas cu. ft.
Human Infectious Diseases	4,384 Covid cases	N/A	N/A
Infrastructure Failure	Unknown	Unknown	Varies by event
Severe Thunderstorms	325	27/27 = 100%	>1" rainfall Avg 65 mph winds
Severe Winter Storms	109	27/27 = 100%	1-16" snow 10-60 mph winds
Terrorism and Civil Unrest	0	Less than 1%	Varies by event
Tornado and Windstorm	Tornadoes: 14	8/27 = 30%	Mode: EF0 Range: EF0-EF2
	Windstorms: 47	23/27 = 85%	Avg: 56 mph Range 40-70 mph
Transportation Incident	Auto: 1,566	11/11 = 100%	Damages incurred to vehicles involved and traffic delays; substantial damages to aircrafts involved with some aircrafts destroyed
	Aviation: 19	21/62 = 34%	
	Rail: 36	24/48 = 50%	

* Annual Probability = Total Years with an Event Occurrence / Total Years of Record

The following table provides loss estimates for hazards with sufficient data. Detailed descriptions of major events are included in *Section Seven: Community Profiles*.

Table 41: Hazard Loss Estimates for the Planning Area

Hazard Type		Count	Property	Crop ¹
Animal and Plant Disease	Animal Disease ¹⁵	1	N/A	N/A
	Plant Disease ¹	16	N/A	\$55,979
Dam Failure²		0	-	N/A
Drought^{3,6}		423/1,540 months	\$12,650,000	\$29,485,242
Earthquake⁴		0	-	-
Extreme Temperatures⁵	Cold (Max Temp ≤10°F)	Avg 9 days per year	N/A	\$12,905
	Heat (Max Temp ≥100°F)	Avg 1 day per year	N/A	\$674,569
Flooding⁶	Flash Flood	22	\$1,280,000	\$207,267
	Flood	59	\$3,709,500	
Grass and Wildland Fire⁷		22	125 acres	N/A
Hazardous Materials Release	Fixed Site ⁸	7	\$0	N/A
	Transportation ⁹	8	\$421,171	N/A

Hazard Type		Count	Property	Crop ¹
Human Infectious Diseases¹⁴ <i>101 deaths (Covid)</i>		4,384 Covid cases	N/A	N/A
Infrastructure Failure		Unknown	N/A	N/A
Severe Thunderstorms⁶	Hail	145	\$617,000	\$92,341,400
	Heavy Rain	47	\$0	
	Lightning	3	\$14,000	
	Thunderstorm Wind	130	\$3,062,000	
Severe Winter Storms⁶	Blizzard	36	\$575,000	\$1,923,836
	Heavy Snow	21	\$389,545	
	Ice Storm	14	\$226,280	
	Winter Storm	37	\$590,900	
	Winter Weather	1	\$0	
Terrorism and Civil Unrest¹⁰		0	-	N/A
Tornado and Windstorm⁶	Tornadoes: Mode: EF0 Range: EF0-EF2	14	\$1,393,000	\$32,815
	Windstorms: Average: 56 mph Range: 40-70 mph	47	\$1,660,740	\$4,335,102
Transportation Incident	Auto ¹¹ <i>414 injuries, 18 deaths</i>	1,566	\$17,087,284	N/A
	Aviation ¹² <i>5 injuries, 5 deaths</i>	24	N/A	N/A
	Rail ¹³ <i>16 injuries, 4 deaths</i>	36	\$346,980	N/A
Total		2,256	\$31,373,400	\$129,069,114

N/A: Data not available

1 USDA RMA, 2000 - 2022

2 IDNR Communication, 2023

3 NOAA, 1895 - March 2023

4 USGS, 1900 - May 2023

5 NOAA Regional Climate Center, 1939 - 2022

6 NCEI, 1996 - 2022

7 IDNR, 2008 - 2023

8 NRC, 1990 - 2022

9 PHMSA 1971 - April 2023

10 University of Maryland, 1970 - 2018

11 IDOT, 2013 - April 2023

12 NTSB, 1962 - May 2023

13 FRA, 1975 - 2022

14 The New York Times, as of 3/23/2023

15 IDALS, 2022

FEMA National Risk Index

FEMA's National Risk Index is an online tool that analyzes natural hazard and community risk factors to develop a risk measurement for each county in the United States. Eighteen natural hazards are given a score from very high to very low. The table below gives the National Risk Index ratings for each county in the planning area. Risk Index scores are calculated using an equation that combines scores for expected annual loss, social vulnerability, and community resilience. All values fall between 0 (lowest possible value) and 100 (highest possible value). The national average is 50.02 and the Iowa average is 48.31.

Table 42: National Risk Index

Hazard	Risk Index Rating
Avalanche	Not Applicable
Coastal Flooding	Not Applicable
Cold Wave	Relatively High (85.9)
Drought	Relatively Moderate (97.2)
Earthquake	Very Low (16)
Hail	Relatively Low (71.2)
Heat Wave	Relatively Low (34.2)
Hurricane	Not Applicable
Ice Storm	Relatively Low (56.4)
Landslide	Relatively Low (45.9)
Lightning	Very Low (24.2)
Riverine Flooding	Relatively Low (59.9)
Strong Wind	Relatively Moderate (77.2)
Tornado	Relatively Moderate (71.1)
Tsunami	Not Applicable
Volcanic Activity	Not Applicable
Wildfire	Very Low (18.1)
Winter Weather	Relatively High (92.3)
Overall Score	Relatively Low (56.35)

Source: FEMA⁴⁷

Historical Disaster Declarations

The following tables show past disaster declarations that have been granted within the county.

Small Business Administration and Secretarial Disasters

The U.S. Small Business Administration (SBA) was created in 1953 as an independent agency of the federal government to aid, counsel, assist, and protect the interests of small business concerns, to preserve free competitive enterprise, and maintain and strengthen the overall economy of our nation. A program of the SBA includes disaster assistance for those affected by major natural disasters. The USDA Secretary of Agriculture is also authorized to make disaster declarations to make emergency loans available through the Farms Service Agency.

Table 43 summarizes the SBA Disasters and Secretarial Disasters involving the planning area since 2018.

⁴⁷ FEMA. "The National Risk Index". Accessed October 2023. <https://hazards.fema.gov/nri/map>.

Table 43: SBA Declarations and Secretarial Disaster Declarations

Declaration Date	Disaster Declaration Number	Title	Listed as Primary County	Listed as Contiguous County
3/20/2019	MN-00067	Excessive Rain and Flooding		X
9/8/2020	IA-00096	Drought		X
10/16/2020	IA-00099	Drought		X
4/2/2021	IA-00102	Drought		X
6/22/2021	IA-00103	Drought	X	
8/10/2021	IA-00105	Drought		X
8/11/2021	IA-00104	Drought		X
8/11/2021	MN-00089	Drought		X
8/15/2021	IA-00115	Drought		X
9/26/2022	IA-00117	Drought	X	
8/14/2023	IA-00129	Drought		X
9/6/2023	IA-00133	Drought		X
9/18/2023	MN-00115	Drought		X
9/18/2023	IA-00135	Drought		X

Source: Small Business Administration, 2018 - October 2023⁴⁸

Presidential Disaster Declarations

The presidential disaster declarations involving the county from 1962 to October 2023 are summarized in the following table. Declarations prior to 1962 are not designated by county and are not included.

Table 44: Presidential Disaster Declarations

Disaster Declaration Number	Declaration Date	Title
193	04/22/65	Flooding
590	07/01/79	High Winds & Tornadoes
715	06/27/84	Severe Storms, Tornadoes, Hail & Floods
911	07/12/91	Severe Storms & Flooding
928	12/26/91	Ice Storm
986	04/26/93	Severe Storms & Flooding
996	07/09/93	Severe Storms & Flooding
1230	07/02/98	Severe Storms, Tornadoes and Flooding
1518	05/25/04	Severe Storms, Tornadoes, and Flooding
3239	09/10/05	Hurricane Katrina Evacuation
3275	03/30/07	Snow
1763	05/27/08	Severe Storms, Tornadoes, and Flooding
1930	07/29/10	Severe Storms, Flooding, and Tornadoes
4184	07/24/14	Severe Storms, Tornadoes, Straight-Line Winds, and Flooding
4386	08/20/18	Severe Storms, Tornadoes, Straight-Line Winds, and Flooding
4421	03/23/19	Severe Storms and Flooding
3480	03/13/20	Covid-19
4483	03/23/20	Covid-19 Pandemic

Source: Federal Emergency Management Agency, 1962 – October 2023⁴⁹

48 Small Business Administration. 2023. "Current Declared Disasters". <https://disasterloanassistance.sba.gov/ela/s/search-declarations>.

49 Federal Emergency Management Agency. 2023. "Disaster Declarations". <https://www.fema.gov/disasters>.

Governor's Disaster Proclamations

The governor's disaster proclamations involving the county from 2019 to April 2024 are summarized in the following table.

Table 45: Governor's Disaster Proclamations

Disaster Proclamation Number	Proclamation Date	Title
2019-01	03/14/2019	Flooding and Flash Flooding, March 13 and continuing
2020-01	3/09/2020	COVID-19 Virus
2021-18	8/31/2021	Severe weather beginning August 24 and continuing
2021-28	12/16/2021	Severe weather beginning December 15 and continuing
2023-33	11/07/2023	Avian Influenza – Kossuth County

Source: Iowa Homeland Security and Emergency Management, 2019 – April 2024⁵⁰

Climate Adaptation

Long-term climate trends have shifted throughout the 21st century and have created significant changes in precipitation and temperature which have altered the severity and subsequent impacts from severe weather events. Changes in the regional climate is a top concern impacting communities, residents, local economies, and infrastructure throughout the planning area. Discussions on temperature, precipitation, and climate impacts are included below.

The planning area is located in the Midwest region of the United States, which includes Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. The area is well known for agricultural production. The Midwest has many federal, state, and private forests that provide considerable economic and ecological benefits. The Fourth National Climate Assessment has provided an overview of potential impacts within the planning area.⁵¹

- Agriculture:** The Midwest is a major producer of a wide range of food and animal feed for national consumption and international trade. Increases in warm-season absolute humidity and precipitation have eroded soils, created favorable conditions for pests and pathogens, and degraded the quality of stored grain. Projected changes in precipitation, coupled with rising extreme temperatures before mid-century, will reduce Midwest agricultural productivity to levels of the 1980s without major technological advances.
- Forestry:** Midwest forests provide numerous economic and ecological benefits, yet threats from a changing climate are interacting with existing stressors such as invasive species and pests to increase tree mortality and reduce forest productivity. Without adaptive actions, these interactions will result in the loss of economically and culturally important tree species such as paper birch and black ash and are expected to lead to the conversion of some forests to other forest types or even to non-forested ecosystems by the end of the century. Land managers are beginning to manage risk in forests by increasing diversity and selecting for tree species adapted to a range of projected conditions.

50 Iowa Homeland Security and Emergency Management. April 2024 "Governor's Disaster Declarations.". <https://homelandsecurity.iowa.gov/disasters/>.

51 U.S. Global Change Research Program. 2018. "Fourth National Climate Assessment". <https://nca2018.globalchange.gov/>.

- **Biodiversity and Ecosystems:** The ecosystems of the Midwest support a diverse array of native species and provide people with essential services such as water purification, flood control, resource provision, crop pollination, and recreational opportunities. Species and ecosystems, including the important freshwater resources of the Great Lakes, are typically most at risk when climate stressors, like temperature increases, interact with land-use change, habitat loss, pollution, nutrient inputs, and nonnative invasive species. Restoration of natural systems increases in the use of green infrastructure, and targeted conservation efforts, especially of wetland systems, can help protect people and nature from climate change impacts.
- **Human Health:** Climate change is expected to worsen existing health conditions and introduce new health threats by increasing the frequency and intensity of poor air quality days, extreme high temperature events, and heavy rainfalls; extending pollen seasons; and modifying the distribution of disease-carrying pests and insects. By mid-century, the region is projected to experience substantial, yet avoidable, loss of life, worsened health conditions, and economic impacts estimated in the billions of dollars as a result of these changes. Improved basic health services and increased public health measures—including surveillance and monitoring—can prevent or reduce these impacts.
- **Transportation and Infrastructure:** Storm water management systems, transportation networks, and other critical infrastructure are already experiencing impacts from changing precipitation patterns and elevated flood risks. Green infrastructure is reducing some of the negative impacts by using plants and open space to absorb storm water. The annual cost of adapting urban storm water systems to more frequent and severe storms is projected to exceed \$500 million for the Midwest by the end of the century.
- **Community Vulnerability and Adaptation:** At-risk communities in the Midwest are becoming more vulnerable to climate change impacts such as flooding, drought, and increases in urban heat islands. Tribal nations are especially vulnerable because of their reliance on threatened natural resources for their cultural, subsistence, and economic needs. Integrating climate adaptation into planning processes offers an opportunity to better manage climate risks now. Developing knowledge for decision-making in cooperation with vulnerable communities and tribal nations will help to build adaptive capacity and increase resilience.

Iowa's Changing Climate

The United States as a whole is experiencing significant changes in temperature, precipitation, and severe weather events resulting from climate change. According to the Iowa Climate Change Impacts Committee's Report to the Governor and Iowa General Assembly, the following changes can be expected for Iowa's future climate:⁵²

Increased Precipitation

- Increased frequency of precipitation extremes that lead to flooding.

⁵² Iowa Climate Change Impacts Committee. 2010. "Climate Change Impacts on Iowa".
https://www.iowadnr.gov/portals/idnr/uploads/air/environment/climatechange/complete_report.pdf?amp;tabid=1077

- Increase of 8 percent more precipitation from 1873 to 2008.
- A larger increase in precipitation in eastern Iowa than in western Iowa.

Higher Temperatures

- Long-term winter temperatures have increased six times more than summer temperatures.
- Nighttime temperatures have increased more than daytime temperatures since 1970.
- Iowa's humidity has risen substantially, especially in summer, which now has 13 percent more atmospheric moisture than 35 years ago as indicated by a three to five degree (Fahrenheit) rise in dew-point temperature. This fuels convective thunderstorms that provide more summer precipitation.

Agricultural Challenges

- Climate extremes, not averages, have the greater impact on crop and livestock productivity.
- Increased soil erosion and water runoff.
- Increased challenges associated with manure applications.
- Favorable conditions for survival and spread of many unwanted pests and pathogens.

Habitat Changes

- Plants are leafing out and flowering sooner.
- Birds are arriving earlier in the spring.
- Particular animals are now being sighted farther north than in the past.

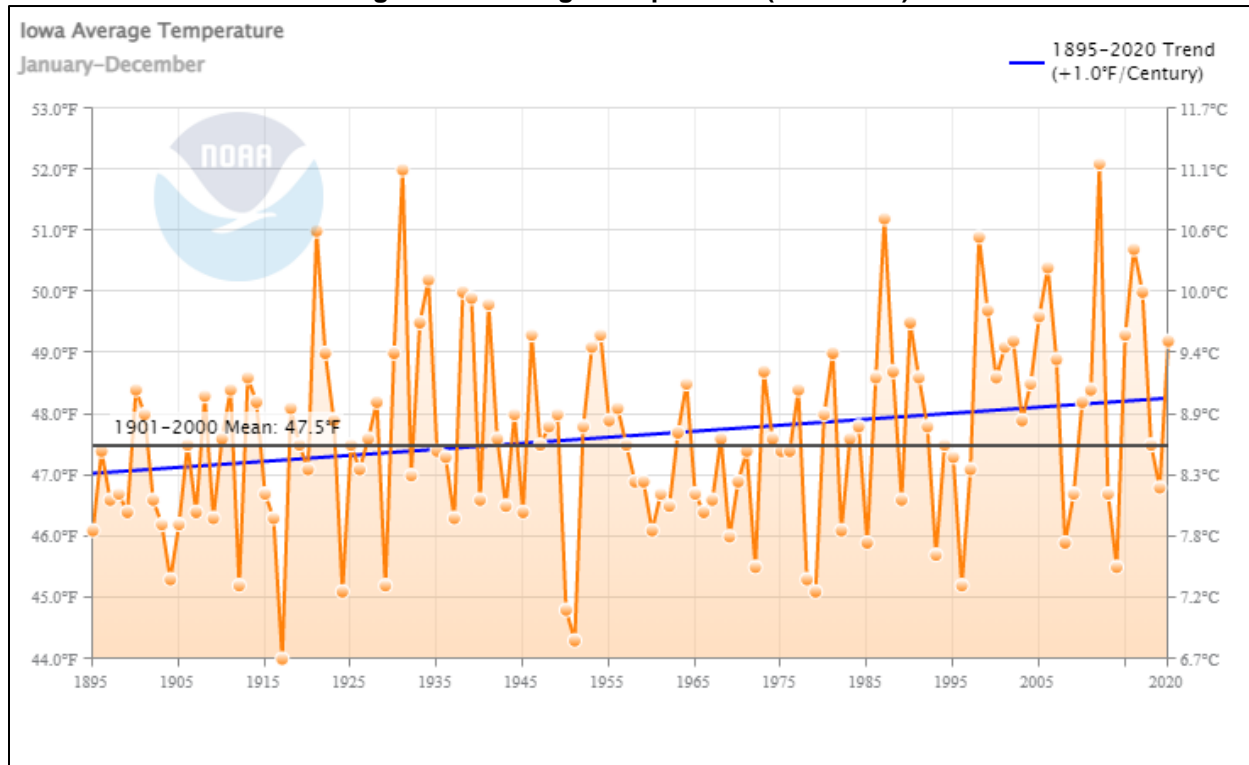
Public Health Effects

- Increases in heart and lung programs from increasing air pollutants of ozone and fine particles enhanced by higher temperatures.
- Increases in infectious diseases transmitted by insects that require a warmer, wetter climate.
- An increased prevalence of asthma and allergies.

Changes in Temperature

Since 1895 Iowa's overall average temperature has increased by 1°F (Figure 12). Climate modeling suggests warmer temperature conditions will continue in the coming decades and rise steadily into mid-century. Warming has increased the most in winter and spring months with winter minimum temperatures rising 2-4°F. In addition, there is greater warming for nighttime lows than for daytime highs. Since 2000, temperatures in Iowa have been higher than any other historical period, apart from the 1930s dustbowl era. Warming across the state has been mostly in the winter and fall, while summer has not warmed substantially with a below average number of very hot days. Historically unprecedented warming is projected to continue during this century (Figure 13).⁵³

Figure 12: Average Temperature (1895-2020)



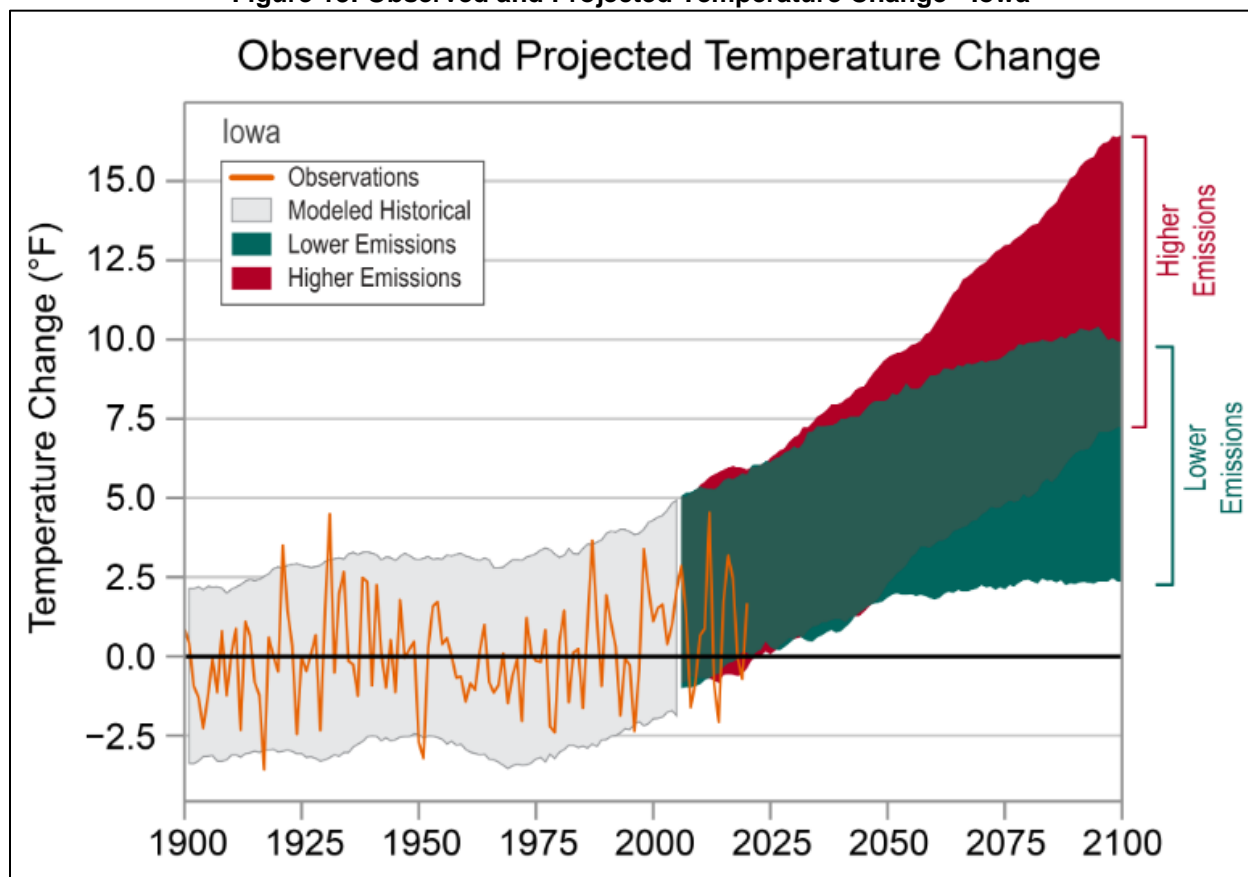
Source: NOAA, 2022⁵⁴

53 NOAA. "State Climate Summaries 2022 - Iowa". Accessed June 2022.

<https://statesummaries.ncics.org/chapter/ia/#:~:text=Precipitation%20varies%20widely%20across%20Iowa,central%20part%20of%20the%20state.>

54 NOAA. 2020. "Climate at a Glance: Statewide Time Series.". Accessed June 2022.

https://www.ncdc.noaa.gov/cag/statewide/time-series/13/tavg/12/12/1895-2020?base_prd=true&begbaseyear=1901&endbaseyear=2000&trend=true&trend_base=100&begtrendyear=1895&endtrendyear=2020

Figure 13: Observed and Projected Temperature Change - Iowa

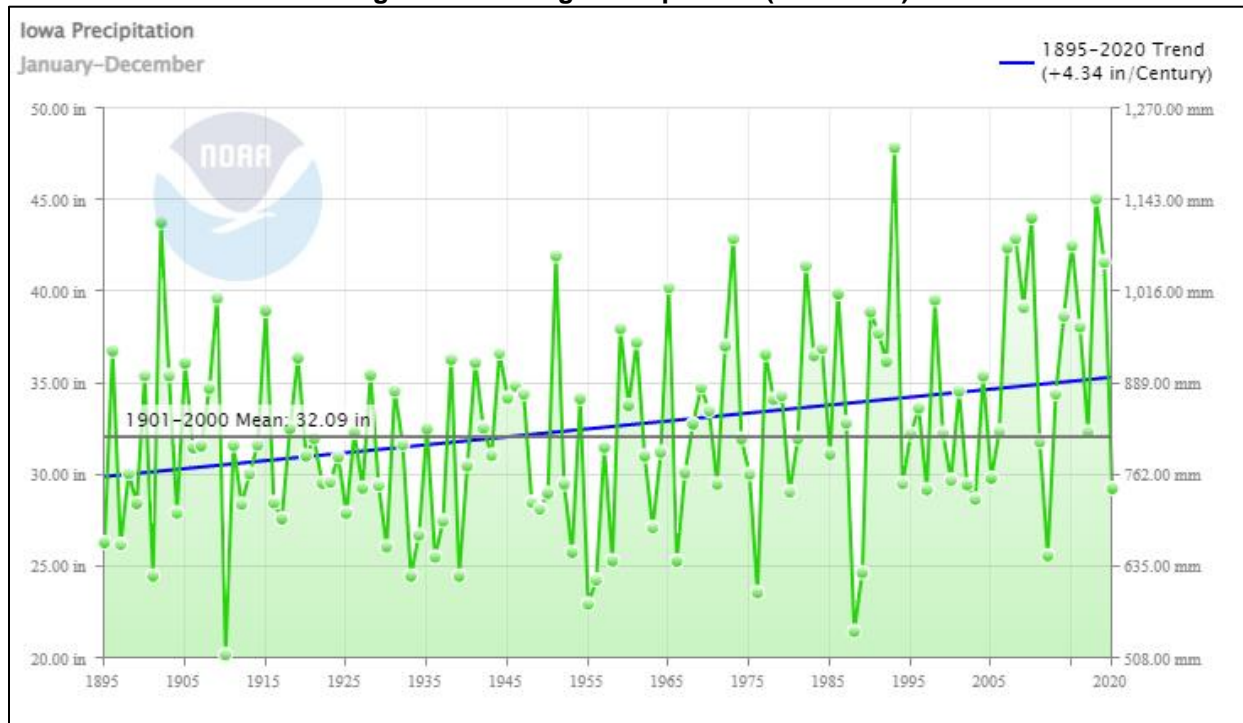
Source: NCEI

Changes in Precipitation

Changing extremes in precipitation are anticipated in the coming decades, with more significant rain and snowfall events and more intense drought periods. Climatological patterns of precipitation for Iowa consist of an east-west gradient, with drier conditions to the west and wetter to the east. The southeastern portion of the state receives around 38 inches annually compared to only 26 inches in the northwest. Much of Iowa's precipitation falls in summer, with an average of 14 inches in the central part of the state. Spring precipitation has been above average since 1990. Since 1895, yearly annual precipitation for Iowa has increased (Figure 14). This trend is expected to continue as the impacts of climate change continue to be felt.⁵⁵

⁵⁵ NOAA. "State Climate Summaries 2022 - Iowa". Accessed June 2022.

<https://statesummaries.ncics.org/chapter/ia/#:~:text=Precipitation%20varies%20widely%20across%20Iowa,central%20part%20of%20the%20state.>

Figure 14: Average Precipitation (1895-2020)

Source: NOAA, 2022⁵⁶

Impacts from Climate Change

Observed changes in the intensity and frequency of extreme events are a significant concern now and in the future because of the social, environmental, and economic costs associated with their impacts. Challenges that are expected to affect communities, environments, and residents as a result of climate change include:

- Developing and maintaining sustainable agricultural systems.
- Resolving increasing competition among land, water, and energy resources.
- Conserving vibrant and diverse ecological systems.
- Enhancing the resilience of the region's people to the impacts of climatic extremes.

Certain groups of people may face greater difficulty when dealing with the impacts of a changing climate. Older adults, immigrant communities, and those living in poverty are particularly susceptible. Additionally, specific industries and professions tied to weather and climate, like outdoor tourism, commerce, and agriculture, are especially vulnerable.⁵⁷

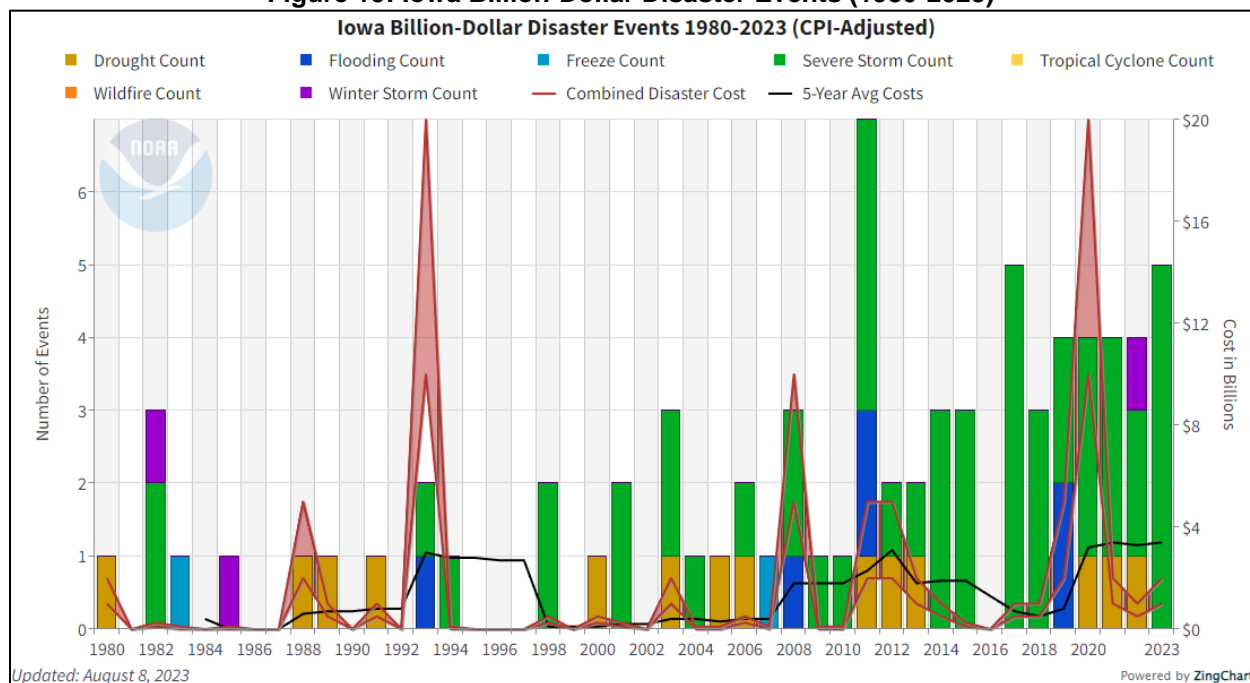
As seen in the figure below, Iowa is experiencing an increase in the number of billion-dollar natural disasters due to increases in development and climate change.

⁵⁶ NOAA. 2020. "Climate at a Glance: Statewide Time Series." Accessed June 2022.

https://www.ncdc.noaa.gov/cag/statewide/time-series/13/pcp/12/12/1895-2020?base_prd=true&begbaseyear=1901&endbaseyear=2000&trend=true&trend_base=100&begtrendyear=1895&endtrendyear=2020

⁵⁷ U.S. Environmental Protection Agency. "Climate Impacts on Society." Accessed June 2022.

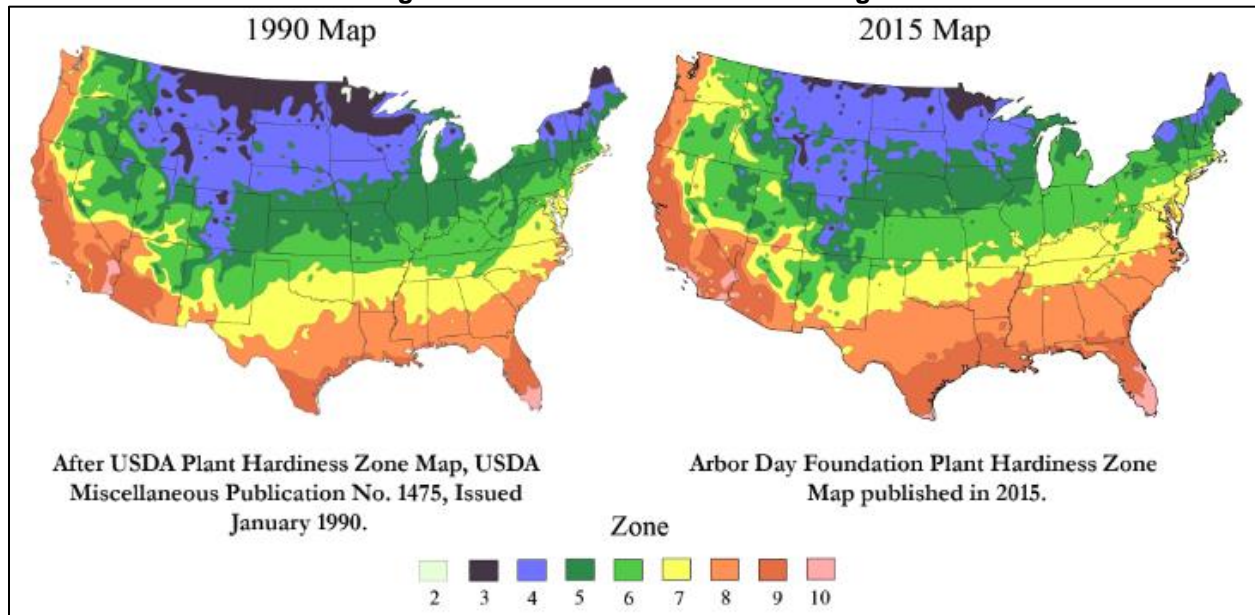
https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-society_.html

Figure 15: Iowa Billion-Dollar Disaster Events (1980-2023)Source: NOAA, 2023⁵⁸

Agriculture

Agriculture is one of the most important sectors in Iowa's economy and is especially vulnerable to extreme weather conditions. The agricultural sector will experience an increase in droughts, an increase in grass and wildfire events, changes in the growth cycle as winters warm, an influx of new and damaging agricultural diseases or pests, and changes in the timing and magnitude of rainfall. As described in the Plant Hardiness Zone map available for the United States (Figure 16), these changes have shifted the annual growing season and expected agricultural production conditions. Iowa is vulnerable to changes in growing season duration and growing season conditions as a heavily agriculturally dependent state. These added stressors on agriculture could have devastating economic effects if new agricultural and livestock management practices are not adopted.

⁵⁸ NOAA National Centers for Environmental Information. August 2023. "Iowa Billion-Dollar Weather and Climate Disasters". <https://www.ncdc.noaa.gov/billions/>

Figure 16: Plant Hardiness Zone Change

Source: Arbor Day Foundation, 2018⁵⁹

Air Quality

Rising temperatures will also impact air quality. Harmful air pollutants and allergens increase as temperatures increase. More extended periods of warmth contribute to longer pollen seasons that allow plant spores to travel farther and increase exposure to allergens. More prolonged exposure to allergens can increase the risk and severity of asthma attacks and worsen existing allergies in individuals.⁶⁰ An increase in air pollutants can occur from the increased number of grass/wildfires. The public can be exposed to harmful particulate matter from smoke and ash that can cause various health issues. Depending on the length of exposure, age, and individual susceptibility, effects from wildfire smoke can range from eye and respiratory irritation to severe disorders like bronchitis, asthma, and aggravation of pre-existing respiratory and cardiovascular diseases.⁶¹

Water Quality

Increasing temperatures, shifting precipitation patterns, and extreme weather events impact water quality throughout the state. With the increasing intensity and frequency of extreme precipitation events, impacts to water systems ultimately threaten human health. Events can lead to flooding and stormwater runoff that can carry pollutants across landscapes and threaten human health by contaminating water wells, groundwater, and other bodies of water. Common pollutants include pesticides, bacteria, nutrients, sediment, animal waste, oil, and hazardous waste.

As average temperatures increase, water temperatures also rise and put water bodies at risk for eutrophication and excess algal growth that reduce water quality. In agricultural landscapes this can be exacerbated from major storm events that cause sediment and nutrients such as phosphorous and nitrogen to runoff into nearby water sources. The runoff can contribute to the buildup of nutrients in the water, increasing plant and algae growth that can deplete oxygen and kill aquatic life. Nutrient enrichment can lead to toxic cyanobacterial harmful algae blooms (cyanoHABs), which can be harmful to animal and human health. CyanoHABs can cause

⁵⁹ Arbor Day Foundation. 2018. "Hardiness Zones." https://www.arborday.org/media/map_change.cfm.

⁶⁰ Asthma and Allergy Foundation of America. 2010. "Extreme Allergies and Climate Change." Accessed 2022. <https://www.aafa.org/extreme-allergies-and-climate-change/>.

⁶¹ AirNow. 2019. "Wildfire Smoke: A Guide for Healthcare Professionals." Accessed 2022. <https://www.airnow.gov/wildfire-smoke-guide-publications/>

economic damage such as decreasing property values, reducing recreational revenue, and increasing the costs for treating drinking water.⁶²

Zoonotic Disease

Changes in temperature and precipitation can alter the geographic range of disease-carrying insects and pests. Mosquitoes that transmit viruses such as Zika, West Nile and dengue may become more prevalent in Iowa because of the increased temperatures and precipitation. These diseases may initially spread faster as the local population is not aware of the proper steps to reduce their risk.

Energy

As the number of 100°F days increases, along with warming nights, the stress placed on the energy grid will likely increase and possibly lead to more power outages. Severe weather events also stress emergency production, infrastructure transmission, and transportation. Roads, pipelines, and rail lines are all at risk of damages from flooding, extreme heat, erosion, or added stress from increased residential demands.⁶³ Critical facilities and vulnerable populations that are not prepared to handle periods of power outages, particularly during heat waves, will be at risk.

Drought and Extreme Heat

In Iowa, future droughts are projected to increase in intensity even with an increase in precipitation. An increase in average temperatures will contribute to the rise in the frequency and intensity of hazardous events like extreme heat and drought, which will cause significant economic, social, and environmental impacts on Iowans. Although drought is a natural part of the climate system, increasing temperatures will increase evaporation rates, decrease soil moisture, and lead to more intense droughts in the future, having negative impacts on farming and community water systems. Extreme heat events have adverse effects on both human and livestock health. Heatwaves may also impact plant health, with negative effects on crops during essential growth stages. Increasing temperatures and drought may reduce the potential for aquifers to recharge, which has long-term implications for the viability of agriculture in Iowa.

Grass/Wildfire

Rising temperatures will likely increase the frequency and intensity of grass/wildfires. Warmer temperatures cause snow to melt sooner and create drier soils and forests, which act as kindling to ignite fires. Dry and dead trees will increase fuel loads causing fires to spread much quicker. Additionally, warmer nighttime temperatures contribute to the continued spread of wildfires over multiple days.⁶⁴

⁶² USGS. "Nutrients and Eutrophication". Accessed February 2021. https://www.usgs.gov/mission-areas/water-resources/science/nutrients-and-eutrophication?qt-science_center_objects=0#qt-science_center_objects.

⁶³ USGCRP, 2018: Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II: Report-in-Brief [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 186 pp.

⁶⁴ NASA Global Climate Change. September 2019. "Satellite Data Record Shows Climate Change's Impact on Fires." Accessed 2021. <https://climate.nasa.gov/news/2912/satellite-data-record-shows-climate-changes-impact-on-fires/>.

Severe Storms and Flooding

Iowa experiences frequent snowstorms and ice storms during winter, which can produce heavy snowfall and high wind gusts that lead to whiteout conditions. Thunderstorms capable of producing floods, hail, and tornadoes are common in the warmer months. As temperatures continue to rise, more water vapor evaporates into the atmosphere, creating increased humidity, which can increase the frequency and intensity of these storms. An increase in severe storms and heavy rain events will lead to more flooding and larger magnitude flood events. These severe storm and flooding events can cause increased damages to structures and put more people at risk of injury or death. A powerful derecho that occurred on August 10, 2020, was one of the most destructive thunderstorms to ever affect the state. The storm produced widespread winds greater than 100 mph and caused considerable damage to millions of acres of corn and soybean crops across central Iowa. Homes, businesses, and vehicles were also severely damaged, with major impacts occurring mostly in Cedar Rapids.

Future Adaptation and Mitigation

The county will have to adapt to a changing climate and its impacts or experience an increase in economic losses, property damages, agricultural damages, and loss of life. Past events have typically informed HMPs to be more resilient to future events. This HMP includes strategies for the county to address these changes and increase resilience. However, future updates of this HMP should consider including adaptation as a core strategy to be better informed by future projections on the frequency, intensity, and distribution of hazards. Jurisdictions in the county should consider past and future climate changes and impacts when incorporating mitigation actions into local planning processes.

Hazard Profiles

Information from participating jurisdictions was collected and reviewed alongside hazard occurrence, magnitude, and event narratives as provided by local, state, and federal databases. Based on this information, profiled hazards were determined to either have a historical record of occurrence or the potential for occurrence in the future. The following profiles will broadly examine the identified hazards across the region. Hazards of local concern or events which have deviated from the norm are discussed in greater detail in each respective community profile (see *Section Seven* of this plan). The following table identifies the prioritization of hazards by participating jurisdictions (i.e., hazards of top concern). Local jurisdictional planning teams selected these hazards from the regional hazard list as the prioritized hazards for the community based on historical hazard occurrences, potential impacts, and the jurisdictions' capabilities. However, it is important to note that while a jurisdiction may not have selected a specific hazard to be profiled, hazard events can impact any community at any time and their selection is not a full indication of risk.

Table 46: Top Hazards of Concern

Jurisdiction	Animal and Plant Disease	Dam Failure	Drought	Earthquake	Extreme Temperatures	Flooding	Grass/Wildland Fire	Hazardous Materials Release	Human Infectious Diseases	Infrastructure Failure	Severe Thunderstorms	Severe Winter Storms	Terrorism and Civil Unrest	Tornado and Windstorm	Transportation Incident
Kossuth County	X		X			X		X	X		X	X		X	
Algona						X					X	X		X	
Bancroft										X	X	X		X	
Burt					X					X	X	X		X	
Fenton											X	X		X	
Lakota						X		X			X	X		X	
Ledyard			X				X				X	X		X	
Lone Rock							X				X	X		X	
Lu Verne			X		X						X	X		X	
Swea City								X		X		X		X	
Titonka			X								X	X		X	
Wesley						X			X	X		X		X	
Whittemore			X			X					X	X		X	

Jurisdiction	Animal and Plant Disease	Dam Failure	Drought	Earthquake	Extreme Temperatures	Flooding	Grass/Wildland Fire	Hazardous Materials Release	Human Infectious Diseases	Infrastructure Failure	Severe Thunderstorms	Severe Winter Storms	Terrorism and Civil Unrest	Tornado and Windstorm	Transportation Incident
Algona Community School District												X			
North Kossuth Community School District			X							X	X			X	X

Animal and Plant Disease

Agriculture disease is any biological disease or infection that can reduce the quality or quantity of either livestock or vegetative crops. This section looks at both animal disease and plant disease, as both make up a significant portion of Iowa's and the planning area's economy.

The State of Iowa's economy is heavily invested in both livestock and crop sales. According to the Iowa Department of Agriculture & Land Stewardship (IDALS) in 2017, the market value of agricultural products sold was estimated at nearly \$28 billion; this total is split between crops (estimated \$13.8 billion) and livestock (estimated \$15.1 billion). For the planning area, the market value of sold agricultural products totaled \$588 million.⁶⁵

Table 47 shows the population of livestock within the county. This count does not include wild populations that are also at risk from animal diseases.

Table 47: Livestock Inventory

County	Market Value of 2017 Livestock Sales	Cattle and Calves	Hogs and Pigs	Sheep and Lambs	Poultry Egg Layers
Kossuth	\$268,702,000	25,675	596,118	1,137	2,986

Source: U.S. Census of Agriculture, 2017

The following tables provide the value and acres of land in farms for the county. Corn is the most prevalent crop type in the region, followed by soybeans.

Table 48: Land and Value of Farms in the County

County	Number of Farms	Land in Farms (acres)	Market Value of 2017 Crop Sales
Kossuth	1,347	593,983	\$319,352,000

Source: U.S. Census of Agriculture, 2017

Table 49: Crop Values

County	Corn		Soybeans		Wheat	
	Acres Planted	Value (2017)	Acres Planted	Value (2017)	Acres Planted	Value (2017)
Kossuth	307,485	\$200,720,000	221,893	\$116,394,000	-	-

Source: U.S. Census of Agriculture, 2017

Location

Given the strong agricultural presence in the county, animal and plant diseases have the potential to occur across the county. If a major outbreak were to occur, the economy in the entire region would be affected, including urban areas.

The primary land uses where animal and plant disease will be observed include agricultural lands, range or pasture lands, and forests. It is possible that animal or plant diseases will occur in domestic animals or crops in urban areas.

⁶⁵ US Department of Agriculture, National Agricultural Statistics Server. 2023. "2017 Census of Agriculture – County Data." Accessed May 2023.
https://www.nass.usda.gov/Publications/AqCensus/2017/Full_Report/Volume_1_Chapter_2_County_Level/Iowa/.

Historical Occurrences

Animal Disease

Kossuth County experienced confirmed cases of highly pathogenic avian influenza (HPAI) in April 2022 and November 2023. According to IDALS, the virus was found in a non-commercial backyard flock in 2022 and in game bird pheasants, peafowl, and commercial layer chickens in 2023. The Iowa Secretary of Agriculture stated that enhanced biosecurity is the best way to protect animal health. The recent HPAI detections in birds do not present a public health concern, the CDC indicated.⁶⁶

In 2015 Iowa experienced impacts to avian populations when 18 counties and 77 sites across the state were affected by HPAI. The 2018 Iowa State Hazard Mitigation Plan noted that more than 33 million birds had to be euthanized and disposed of with the cost of replacement estimated at \$83.6 million. The replacement cost does not include economic impacts from unemployment and costs to euthanize and dispose of carcasses.

Plant Disease

The RMA provides data on plant disease events and plant losses in the county. There are 16 instances of plant diseases reported from 2000-2022 by the RMA. These outbreaks occurred in 2000, 2001, 2002, 2004, 2005, 2006, 2010, 2012, 2014, 2015, 2016 and 2017, and caused \$55,979 in crop losses.

Emerald Ash Borer

The spread and presence of the Emerald Ash Borer (EAB) have become a rising concern for many Iowan communities in recent years. The beetle spreads through transport of infected ash trees, lumber, and firewood. All species of North American ash trees are vulnerable to infestation. Confirmed cases of EAB have been found in five Canadian provinces and 36 US states, primarily in the eastern, southern, and midwestern regions. EAB was first confirmed in Iowa on May 14th, 2010. Figure 17 shows the locations of Iowa's confirmed EAB cases as of June 2023. EAB was detected in Kossuth County in 2022. Additional confirmed cases have likely occurred and many communities across the state are prioritizing the removal of ash trees to help curb potential infestations and tree mortality.

While adult beetles cause little damage, larvae damage trees by feeding on the inner bark of mature and growing trees, causing tunnels. Effects of EAB infestation include extensive damage to trees by birds, canopy dieback, bark splitting, and water sprout growth at the tree base, and eventual tree mortality. EAB has impacted millions of trees across North America, killing young trees one to two years after infestation and mature trees three to four years after infestation.⁶⁷ In Kossuth County, EAB was confirmed in rural Algona in 2022.⁶⁸ Iowa has an estimated 3.1 million urban ash trees. Estimated costs to Iowa communities for ash tree removal is \$1.6 billion and \$468 million to replant.⁶⁹ Dead or dying trees affected by EAB are also more likely to cause damage during high winds, severe thunderstorms, or severe winter storms from weakened or hazardous limbs and can contribute a significant fuel load to grass/wildfire events.

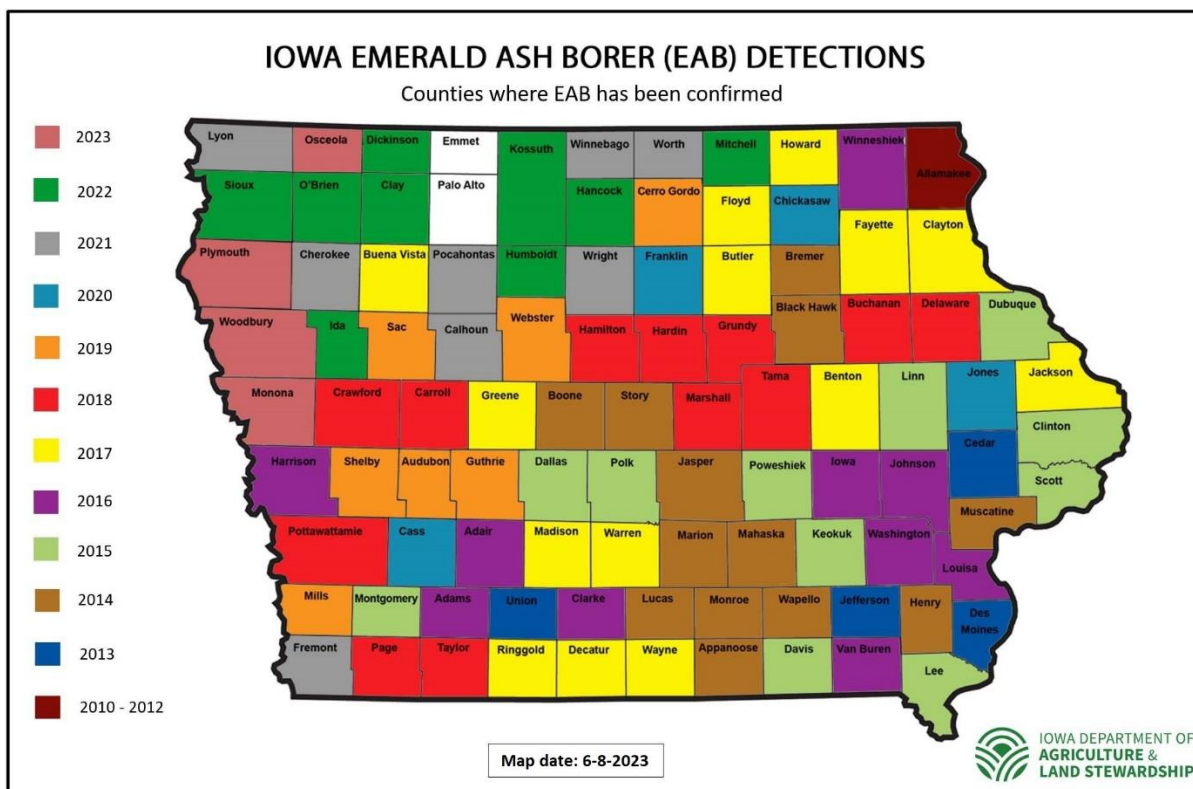
⁶⁶ Iowa Department of Agriculture and Land Stewardship. 2023. "Iowa Department of Agriculture and Land Stewardship: Highly Pathogenic Avian Influenza Case Confirmed in Kossuth County." <https://iowaagriculture.gov/news/highly-pathogenic-avian-influenza-case-confirmed-kossuth-county>.

⁶⁷ Arbor Day Foundation. 2015. "Emerald Ash Borer." <https://www.arborday.org/trees/health/pests/emerald-ash-borer.cfm>.

⁶⁸ Iowa Department of Agriculture & Land Stewardship. 2023. "EAB Confirmed Locations in Iowa." http://www.iowatreepests.com/documents/EAB_Locations_List.pdf.

⁶⁹ Iowa Department of Natural Resources. 2016. "Emerald Ash Borer." <https://www.iowadnr.gov/Portals/idnr/uploads/forestry/Forest%20Health/emerald%20ash%20borer%202016.pdf?ver=2016-12-21-151336-840>.

Figure 17: EAB Infestation Status in Iowa



Iowa Department of Agriculture & Land Stewardship, Entomology & Plant Science Bureau, Entomology@iowaAgriculture.gov, 515-725-1470

Source: Iowa Department of Agriculture & Land Stewardship, 2023⁷⁰

Average Annual Losses

Average annual losses for agricultural animal disease cannot be calculated as there is no source in the state for documented historical events. According to the USDA RMA (2000-2022) there were 16 plant disease events in the planning area. While the RMA does not track losses for livestock, annual crop losses from plant disease can be estimated.

Table 50: Agricultural Plant Disease Losses

Hazard Type	Number of Events	Events per Year	Total Crop Loss	Average Annual Crop Loss
Plant Disease	16	0.7	\$55,979	\$2,434

Source: RMA, 2000-2022

Extent

There is no standard for measuring the magnitude of agricultural disease. The State of Iowa does not report livestock disease numbers, so the extent is not known. The county is heavily dependent on the agricultural economy. Any severe plant or animal disease outbreak which may impact this sector would negatively impact the entire county's economy.

⁷⁰ Iowa Department of Agriculture & Land Stewardship. 2023. "Iowa Emerald Ash Borer (EAB) Infestation Status." http://www.iowatreepests.com/eab_home.html.

Probability

Given the lack of historical livestock disease numbers, the annual probability of animal disease occurrence is unknown. With the historic record for agricultural plant disease events (12 out of 23 years with a reported event), for the purposes of this plan, the annual probability of agricultural plant disease occurrence is 40%.

Community Top Hazard Status

Kossuth County is the only jurisdiction that identified Animal and Plant Disease as a top hazard of concern.

Regional Vulnerabilities

The following table provides information related to regional vulnerabilities; for jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 51: Regional Agricultural Disease Vulnerabilities

Sector	Vulnerability
People	<ul style="list-style-type: none"> -Those in direct contact with infected livestock -Potential food shortage during prolonged events -Residents in poverty if food prices increase
Economic	<ul style="list-style-type: none"> -Regional economy is reliant on the agricultural industry -Large scale or prolonged events may impact tax revenues and local capabilities -Land value may largely drive population changes within the county
Built Environment	None
Infrastructure	-Transportation routes can be closed during quarantine
Critical Facilities	None
Climate	<ul style="list-style-type: none"> -Exacerbate outbreaks, impacts, and/or recovery period -Changes in seasonal normals can promote spread of invasive species and agricultural disease

Dam Failure

A dam is defined as a barrier constructed across a water course for the purpose of storage, control, or diversion of water. Dams are typically constructed of earth, rock, concrete, or mine failings. Dam failure is the uncontrolled release of impounded water resulting in downstream flooding, affecting both life and property. Structural failure can occur during extreme conditions, which include, but are not limited to:

- Reservoir inflows in excess of design flows
- Flood pools higher than previously attained
- Unexpected drop in pool level
- Pool near maximum level and rising
- Excessive rainfall or snowmelt
- Large discharge through spillway
- Erosion, landslide, seepage, settlement, and cracks in the dam or area
- Earthquakes
- Vandalism
- Terrorism

The effective height of a dam is defined as the difference in elevation in feet between the natural bed of the stream or watercourse measured at the downstream toe (or from the lowest elevation of the outside limit of the barrier if it is not across stream) to the auxiliary spillway crest. The effective storage is defined as the total storage volume in acre-feet in the reservoir below the elevation of the crest of the auxiliary spillway. If the dam does not have an auxiliary spillway, the effective height and effective storage should be measured at the top of dam elevation.

The thresholds for state-regulated dams are outlined in Iowa Administrative Code 567-73.3. They are listed below.

- A dam with a height of at least 25 feet and a storage of 15 acre-feet or more at the top of the dam elevation.
- A dam with a storage of 50 acre-feet or more at the top of the dam elevation and a height of at least 6 feet.
- A dam that is assigned a hazard potential of high hazard.

Exceptions include:

- Road embankments or driveways with culverts are exempt unless such structure serves, either primarily or secondarily, a purpose commonly associated with dams, such as the temporary storage of water for flood control.

The State of Iowa assigns existing and proposed dams a hazard potential classification based on future land and impoundment use. Changes in downstream land use, development, impoundment, or critical hydraulic structures to a dam require a reevaluation of the hazard potential. The Iowa Department of Natural Resources periodically performs inspections of dams

posing a significant risk to downstream life and property. The three hazard potential classifications are low hazard, significant hazard, and high hazard and are defined below.

Table 52: Dam Hazard Classification

Hazard Type	Definition
Low	A dam shall be classified as “low hazard” if failure of the dam would result in no probable loss of human life, low economic losses, and low public damages.
Significant	A dam shall be classified as “significant hazard” if failure of the dam would result in no probable loss of human life but may damage residential structures or industrial, commercial, or public buildings; may negatively impact important public utilities or moderately traveled roads or railroads; or may result in significant economic losses or significant public damages.
High	A dam shall be classified as “high hazard” if located in an area where failure would result in probable loss of human life.

Location

According to USACE’s National Inventory of Dams, there are a total of seven dams located within the planning area, with classifications ranging from low to significant hazard potential. Figure 18 maps the location of these dams in the county.

Figure 18: Dam Locations

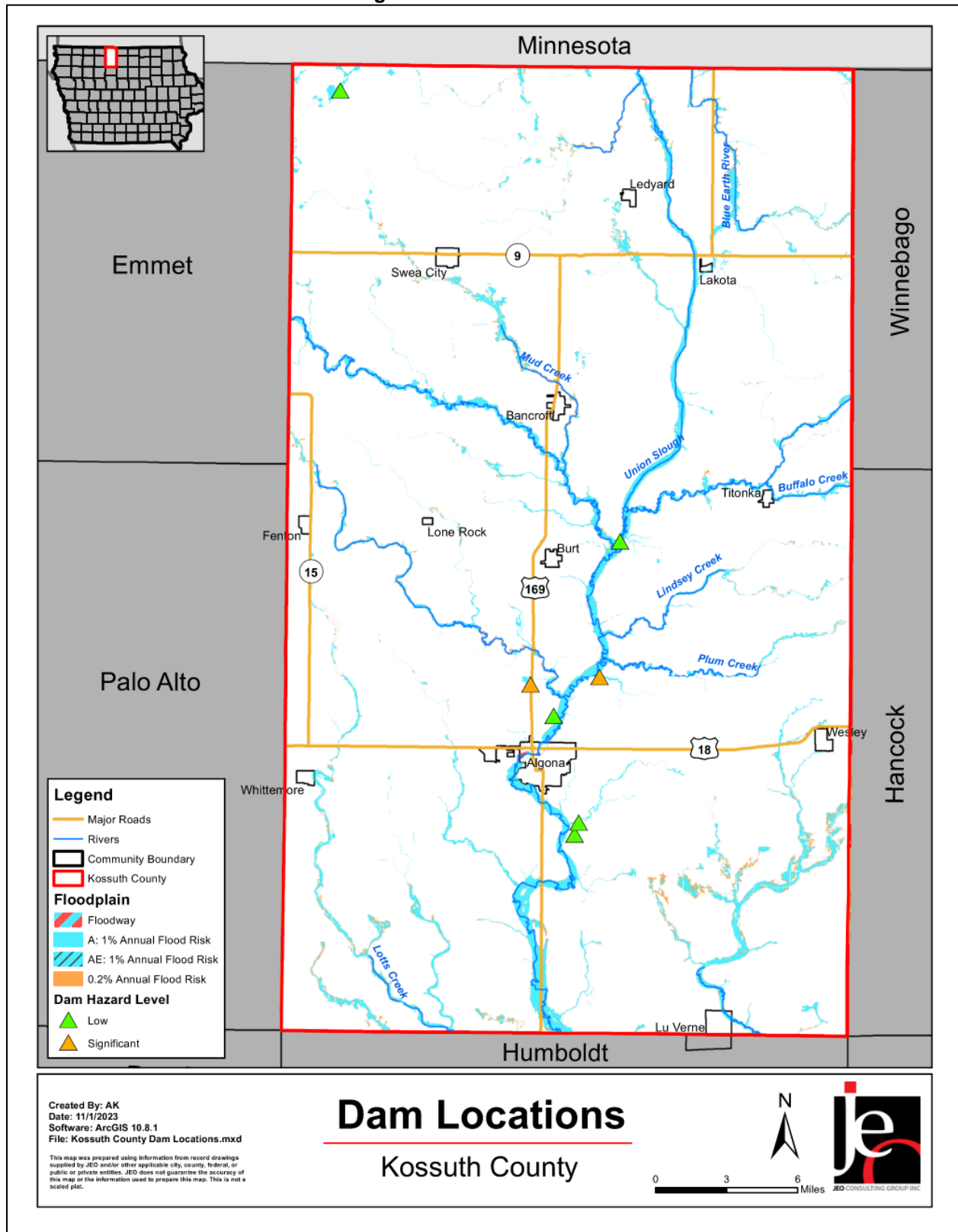


Table 53: Dams in the County

Low Hazard	Significant Hazard	High Hazard
5	2	0

Source: USACE, 2023⁷¹

The USACE and Iowa DNR inventories both list seven dams in the county.⁷² Five dams are classified as low hazard potential and two are classified as significant hazard potential. No dams were classified as high hazard dams. Dams classified with high hazard potential require the creation of an Emergency Action Plan (EAP). The EAP defines responsibilities and provides procedures designed to identify unusual and unlikely conditions which may endanger the structural integrity of the dam within sufficient time to take mitigating actions and to notify the appropriate emergency management officials of possible, impending, or actual failure of the dam. If a dam within the county is reclassified as a high hazard potential dam, then an EAP would be required and developed.

According to the USACE, there are no high hazard dams upstream from the planning area that would impact the county.

Historical Occurrences

According to both IDNR and the Association of State Dam Safety Dam Incident Database, there are no reported dam failures within the planning area.⁷³

Average Annual Losses

There are no recorded instances of dam failure in the planning area; therefore, the average annual losses are \$0.

Extent

Areas directly downstream of dams (e.g., agricultural land, out buildings, county roads, and communities) are at greatest risk in the case of dam failure. The extent of dam failure is indicated by its hazard classification and location. Note that hazard classification does not indicate the likelihood of a dam failure event to occur, but rather the extent of potential damages that may occur in case of a failure.

Probability

For the purpose of this plan, the probability of dam failure will be stated at less than one percent annually as no dams have failed in the planning area.

Community Top Hazard Status

No jurisdictions identified Dam Failure as a top hazard of concern.

⁷¹ United States Army Corps of Engineers. May 2023. "National Inventory of Dams."

<https://nid.sec.usace.army.mil/#/dams/search/sy=@countyState:Kossuth.%20Iowa&viewType=map&resultsType=dams&advanced=false&hideList=false&eventSystem=false>.

⁷² Iowa Department of Natural Resources. August 2023. "Iowa DNR Dam Inventory."

https://iowadnr.knack.com/dams#public/?view_136_filters=%5B%7B%22value%22%3A%22Existing%22%2C%22operator%22%3A%22is%22%2C%22field%22%3A%22field_431%22%7D%5D.

⁷³ Association of State Dam Safety Officials. "Dam Incident Database Search". Accessed August 2023.

<https://damsafety.org/incidents>

Regional Vulnerabilities

The following table provides information related to regional vulnerabilities; for jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 54: Regional Dam Failure Vulnerabilities

Sector	Vulnerability
People	<ul style="list-style-type: none"> -Those living downstream of high hazard dams -Those at recreational sites situated near high hazard dams -Evacuation needs likely with high hazard dam failure events -Hospitals, nursing homes, and the elderly at greater risk due to low mobility
Economic	<ul style="list-style-type: none"> -Loss of downstream agricultural land -Businesses or recreation sites located in inundation areas would be impacted and closed for an extended period of time -Employees of closed businesses may be out of work for an extended period of time
Built Environment	-Damage to facilities, recreation areas, and roads
Infrastructure	-Transportation routes could be closed for extended period of time
Critical Facilities	-Any critical facilities in inundation areas are vulnerable to damages
Climate	<ul style="list-style-type: none"> -Increased annual precipitation contributes to sustained stress on systems -Changes in water availability and supply can constrain energy production and reservoir stores

Drought

Drought is generally defined as a natural hazard that results from a substantial period of below normal precipitation. Although many erroneously consider it a rare and random event, drought is a normal, recurrent feature of climate. It occurs in virtually all climatic zones, but its characteristics vary significantly from one region to another. A drought often coexists with periods of extreme heat, which together can cause significant social stress, economic losses, and environmental degradation. The planning area is largely rural, which presents an added vulnerability to drought events; drought conditions can significantly and negatively impact the agricultural economic base.

Drought is a slow-onset, creeping phenomenon that can affect a wide range of people, livestock, and industries. While many impacts of these hazards are non-structural, there is the potential that during prolonged drought events structural impacts can occur. Drought normally affects more people than other natural hazards, and its impacts are spread over a larger geographical area. As a result, the detection and early warning signs of drought conditions and assessment of impacts are more difficult to identify than that of quick-onset natural hazards (e.g., flood) that results in more visible impacts. According to the National Drought Mitigation Center (NDMC), droughts are classified into four major types:

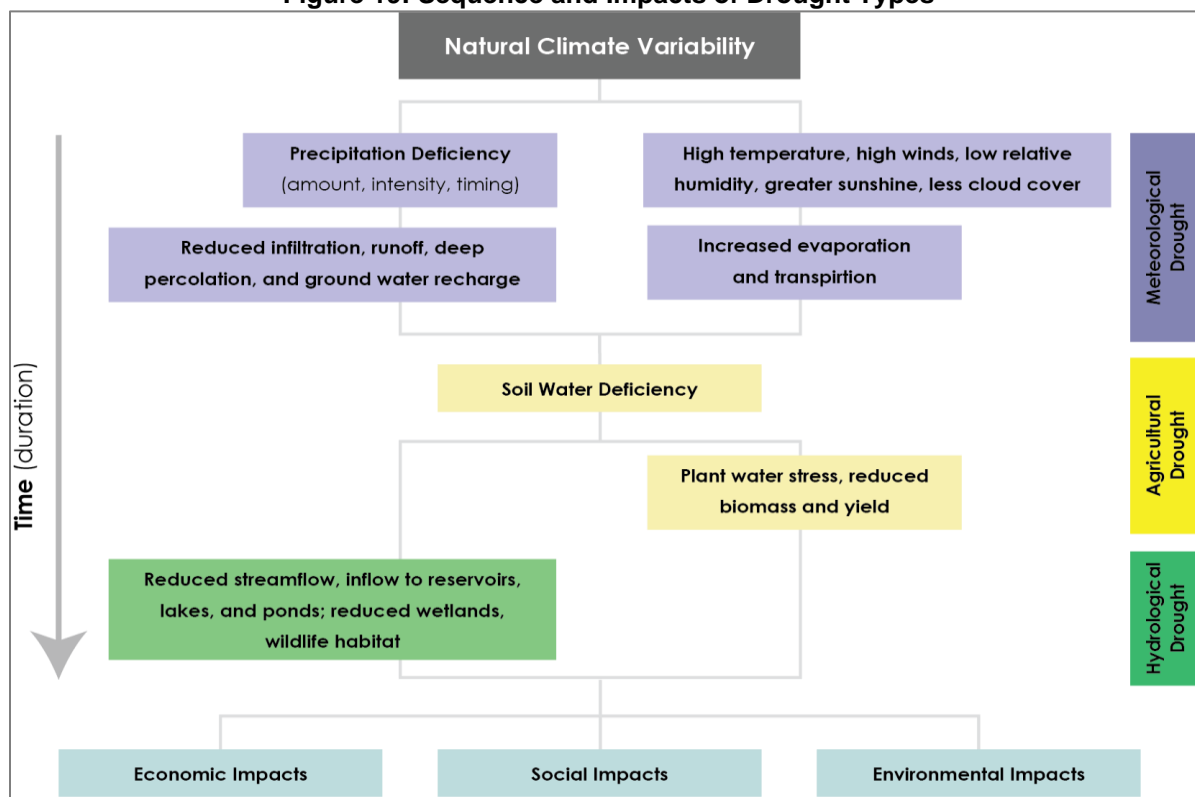
Drought is a normal, recurrent feature of climate, although many erroneously consider it a rare and random event. It occurs in virtually all climatic zones, but its characteristics vary significantly from one region to another.
~National Drought Mitigation Center

- **Meteorological Drought** is defined based on the degree of dryness and the duration of the dry period. Meteorological drought is often the first type of drought to be identified and should be defined regionally as precipitation rates and frequencies (norms) vary.
- **Agricultural Drought** occurs when there is deficient moisture that hinders planting germination, leading to low plant population per hectare and a reduction of final yield. Agricultural drought is closely linked with meteorological and hydrological drought, as agricultural water supplies are contingent upon the two sectors.
- **Hydrologic Drought** occurs when water available in aquifers, lakes, and reservoirs falls below the statistical average. This situation can arise even when the area of interest receives average precipitation. This is due to the reserves diminishing from increased water usage, usually from agricultural use or high levels of evapotranspiration, resulting from prolonged high temperatures. Hydrological drought often is identified later than meteorological and agricultural drought. Impacts from hydrological drought may manifest themselves in decreased hydropower production and loss of water-based recreation.
- **Socioeconomic Drought** occurs when the demand for an economic good exceeds supply due to a weather-related shortfall in water supply. The supply of many economic goods includes, but are not limited to, water, forage, food grains, fish, and hydroelectric power.⁷⁴

The following figure indicates different types of droughts, their temporal sequence, and the various types of effects they can have on a community.

⁷⁴ National Drought Mitigation Center. 2017. "Drought Basics." <https://drought.unl.edu/>.

Figure 19: Sequence and Impacts of Drought Types



Source: National Drought Mitigation Center, University of Nebraska-Lincoln, 2017⁷⁵

Location

The entire county is susceptible to drought impacts.

Historical Occurrences

Table 55 indicates it is reasonable to expect extreme drought to occur 5.4% of the time for the planning area (83 extreme drought months in 1,540 months). Severe drought occurred in 54 months of the 1,540 months of record (3.5% of months). Moderate drought occurred in 107 months of the 1,540 months of record (6.9% of months), and mild drought occurred in 179 of the 1,540 months of record (11.6% of months). Non-drought conditions occurred in 1,117 months, or 73% percent of months. These statistics show that the drought conditions of the planning area are highly variable. The average annual planning area precipitation is approximately 34.09 inches according to the NCEI.⁷⁶

⁷⁵ National Drought Mitigation Center. 2017. "Types of Drought." <https://drought.unl.edu/>.

⁷⁶ NOAA National Centers for Environmental Information. April 2023. "Data Tools: 1991-2020 Normals." [datafile]. <https://www.ncdc.noaa.gov/cdo-web/datatools/normals>.

Table 55: Historical Droughts

Drought Magnitude	Months in Drought	Percent Chance
-1 Magnitude (Mild)	179/1,540	11.6%
-2 Magnitude (Moderate)	107/1,540	6.9%
-3 Magnitude (Severe)	54/1,540	3.5%
-4 Magnitude or Greater (Extreme)	83/1,540	5.4%

Source: NCEI, 1895 - April 2023⁷⁷

Extent

Climatologists utilize the Palmer Drought Severity Index (PDSI) to standardize global long-term drought analysis. The data was collected from Climate Division 2, which includes the planning area, with the period of record beginning in 1895. Table 56 shows the details of the Palmer classifications. Figure 20 shows drought data from this time period. The negative Y axis represents the extent of a drought, for which '-2' indicates a moderate drought, '-3' a severe drought, and '-4' an extreme drought. The planning area has experienced several extreme droughts since 1895 and moderate, severe, and extreme droughts are likely in the future.

Table 56: Palmer Drought Severity Index Classification

Numerical Value	Description	Numerical Value	Description
4.0 or more	Extremely wet	-0.5 to -0.99	Incipient dry spell
3.0 to 3.99	Very wet	-1.0 to -1.99	Mild drought
2.0 to 2.99	Moderately wet	-2.0 to -2.99	Moderate drought
1.0 to 1.99	Slightly wet	-3.0 to -3.99	Severe drought
0.5 to 0.99	Incipient wet spell	-4.0 or less	Extreme drought
0.49 to -0.49	Near Normal	--	--

Source: Climate Prediction Center⁷⁸

⁷⁷ National Centers for Environmental Information. 1895 - April 2023. "Climate at a Glance: Divisional Time Series". Accessed April 2023. <https://www.ncdc.noaa.gov/cag/divisional/time-series>.

⁷⁸ National Weather Service. 2017. "Climate Prediction Center." <https://www.cpc.ncep.noaa.gov/>.

Figure 20: Palmer Drought Severity Index

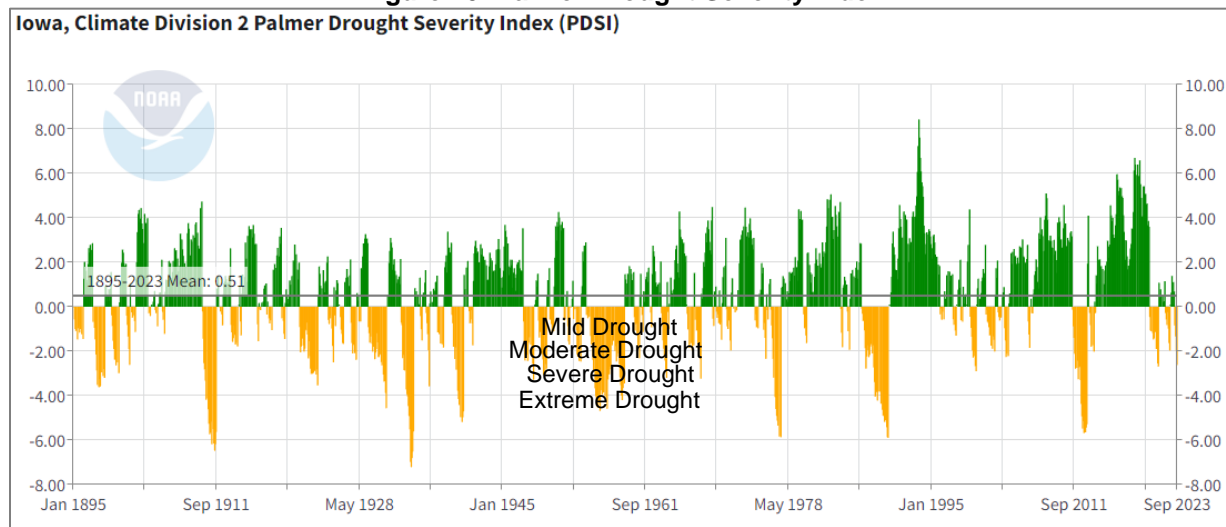
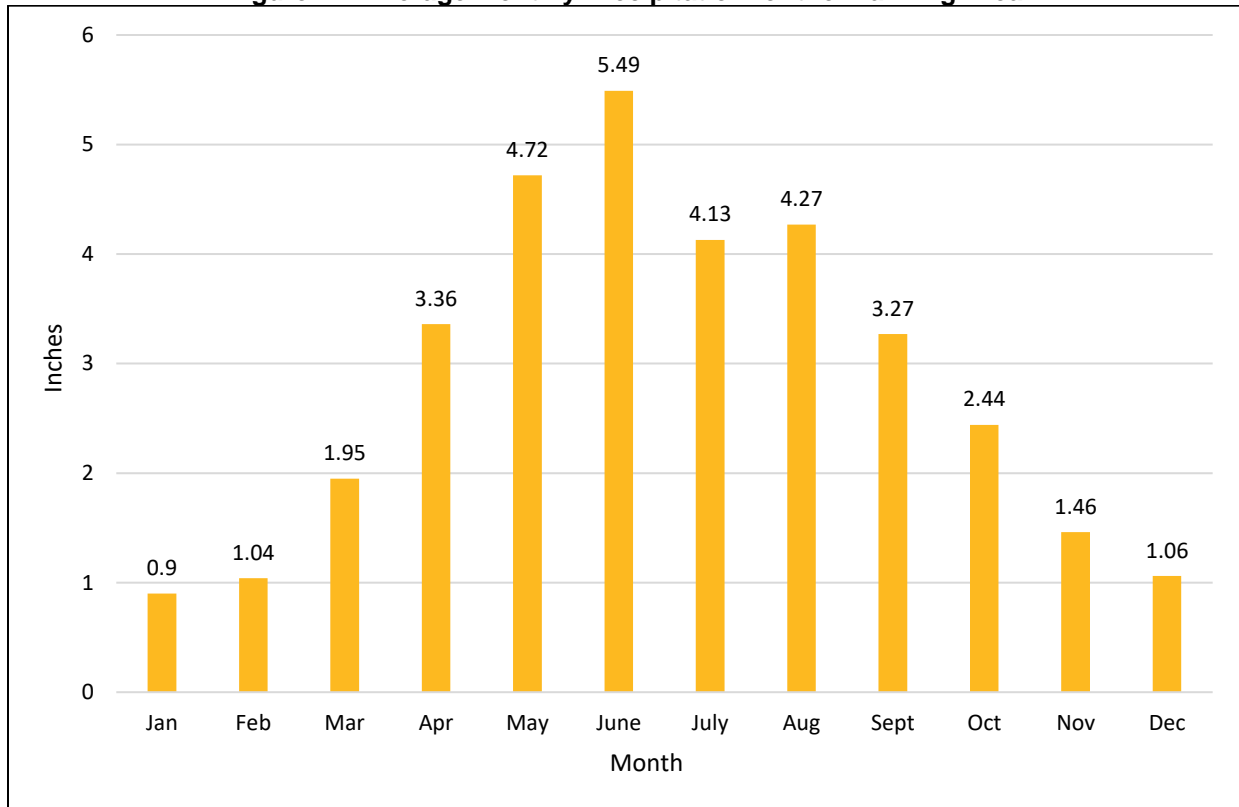


Figure 21 shows the normal average monthly precipitation for the planning area, which is helpful in determining whether any given month is above, below, or near normal in precipitation. Prolonged deviation from the norm showcases drought conditions and influences growing conditions for farmers.

⁷⁹ National Centers for Environmental Information. 1895 – September 2023. "Climate at a Glance: Divisional Time Series". Accessed October 2023. <https://www.ncdc.noaa.gov/cag/divisional/time-series>.

Figure 21: Average Monthly Precipitation for the Planning AreaSource: NCEI, 1991-2020⁸⁰

Average Annual Losses

The annual property estimate was determined based upon NCEI Storm Events Database since 1996. The annual crop loss was determined based upon the RMA Cause of Loss Historical Database since 2000. This does not include losses from displacement, functional downtime, economic loss, injury, or loss of life. The direct and indirect effects of drought are difficult to quantify. Potential losses such as power outages could affect businesses, homes, and critical facilities. High demand and intense use of air conditioning or water pumps can overload the electrical systems and damage infrastructure.

Table 57: Loss Estimate for Drought

Hazard Type	Total Property Loss ¹	Average Annual Property Loss ¹	Total Crop Loss ²	Average Annual Crop Loss ²
Drought	\$12,650,000	\$468,519	\$29,485,242	\$1,281,967

Source: 1 Indicates data is from NCEI (1996-2022); 2 Indicates data is from USDA RMA (2000-2022)

Probability

Drought conditions are likely to occur regularly in the planning area. The following table summarizes the magnitude of drought and monthly probability of occurrence.

⁸⁰ NOAA National Centers for Environmental Information. April 2023. "Data Tools: 1991-2020 Normals." [datafile]. <https://www.ncdc.noaa.gov/cdo-web/datatools/normals>.

Table 58: Period of Record in Drought

PDSI Value	Magnitude	Drought Occurrences by Month	Monthly Probability
4 or more to -0.99	No Drought	1,117/1,540	73.0%
-1.0 to -1.99	Mild Drought	179/1,540	11.6%
-2.0 to -2.99	Moderate Drought	107/1,540	6.9%
-3.0 to -3.99	Severe Drought	54/1,540	3.5%
-4.0 or less	Extreme Drought	83/1,540	5.4%

Source: NCEI, 1895 - April 2023⁸¹

Community Top Hazard Status

The following table lists jurisdictions which identified Drought as a top hazard of concern:

Jurisdictions	
Kossuth County	Titonka
Ledyard	Whittemore
Lu Verne	North Kossuth School District

Regional Vulnerabilities

The Drought Impact Reporter is a database of drought impacts throughout the United States, with data going back to 2000. The Drought Impact Reporter has recorded a total of 13 drought-related impacts throughout the county. Notable drought impacts are summarized in the following table. This is not a comprehensive list of droughts that may have impacted the planning area.

Table 59: Notable Drought Impacts in Planning Area

Category	Date	Title
Agriculture	7/25/2023	Drought, heat hurt crop conditions in Iowa
Fire, Relief, Response & Restrictions	10/25/2022	Burn bans in 28 Iowa counties
Agriculture	1/13/2023	Drought hurting corn, soybean yields in Iowa
Agriculture, Water Supply & Quality	7/8/2016	Corn yield potential down in Iowa
Fire, Relief, Response & Restrictions	10/21/2015	Dry conditions led to Iowa burn bans
Agriculture, Society & Public Health, Water Supply & Quality	5/13/2013	Drought-stressed crops left unused fertilizer in Iowa fields, impacting water quality
Agriculture, Relief, Response & Restrictions	5/17/2013	Drought-related USDA disaster declarations in 2013
Agriculture, Relief, Response & Restrictions	9/21/2012	USDA Designates 6 Counties in Iowa as Primary Natural Disaster Areas with Assistance to Producers in Surrounding States

⁸¹ National Centers for Environmental Information. 1895 - April 2023. Accessed April 2023.
<https://www.ncdc.noaa.gov/cag/divisional/time-series>.

Category	Date	Title
Agriculture, Relief, Response & Restrictions	9/17/2012	USDA Designates 23 Counties in Minnesota as Primary Natural Disaster Areas With Assistance to Producers in Surrounding States
Agriculture, Relief, Response & Restrictions	9/11/2012	USDA Designates Palo Alto County in Iowa as a Primary Natural Disaster Area
Agriculture, Relief, Response & Restrictions	9/21/2012	USDA Designates 3 Counties in Iowa as Primary Natural Disaster Areas With Assistance to Producers in Minnesota
Relief, Response & Restrictions	9/7/2006	Relief, Response & Restrictions impact from Media submitted on 9/7/2006
Relief, Response & Restrictions	11/4/2005	Relief, Response & Restrictions impact from Media submitted on 11/4/2005

Source: NDMC, 2000 - July 2023⁸²

The following table provides information related to regional vulnerabilities. For jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 60: Regional Drought Vulnerabilities

Sector	Vulnerability
People	<ul style="list-style-type: none"> -Insufficient water supply -Loss of jobs in agricultural sector -Residents in poverty if food prices increase
Economic	<ul style="list-style-type: none"> -Closure of water intensive businesses (carwashes, pools, etc.) -Short-term interruption of business -Loss of tourism dollars -Decrease in cattle prices -Decrease of land prices→ jeopardizes educational funds
Built Environment	<ul style="list-style-type: none"> -Cracking foundations (residential and commercial structures) -Damages to landscapes
Infrastructure	<ul style="list-style-type: none"> -Damages to waterlines below ground -Damages to roadways (prolonged extreme events)
Critical Facilities	<ul style="list-style-type: none"> -Loss of power and impact on infrastructure
Climate	<ul style="list-style-type: none"> -Increased risk of wildfire events, damaging buildings and agricultural land

⁸² National Drought Mitigation Center. 2023. "U.S. Drought Impact Reporter." Accessed October 2023.
<http://droughtreporter.unl.edu/map/>.

Earthquake

An earthquake is the result of a sudden release of energy in the Earth's tectonic plates that creates seismic waves. The seismic activity of an area refers to the frequency, type, and size of earthquakes experienced over a period of time. Although rather uncommon, earthquakes do occur in Iowa and are usually small, generally not felt, and cause little to no damage. Earthquakes are measured by magnitude and intensity. Magnitude is measured by the Richter Scale, a base-10 logarithmic scale, which uses seismographs around the world to measure the amount of energy released by an earthquake. Intensity is measured by the Modified Mercalli Intensity Scale, which determines the intensity of an earthquake by comparing actual damage against damage patterns of earthquakes with known intensities. The following tables summarize the Richter Scale and Modified Mercalli Scale.

Table 61: Richter Scale

Richter Magnitudes	Earthquake Effects
Less Than 3.5	Generally not felt but recorded.
3.5 – 5.4	Often felt, but rarely causes damage.
Under 6.0	At most, slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1 – 6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0 – 7.9	Major earthquake. Can cause serious damage over larger areas.
8 Or Greater	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

Source: FEMA, 2016⁸³

⁸³ Federal Emergency Management Agency. 2016. "Earthquake." <https://www.fema.gov/earthquake>.

Table 62: Modified Mercalli Intensity Scale

Scale	Intensity	Description of Effects	Corresponding Richter Scale Magnitude
I	Instrumental	Detected only on seismographs	
II	Feeble	Some people feel it	< 4.2
III	Slight	Felt by people resting, like a truck rumbling by	
IV	Moderate	Felt by people walking	
V	Slightly Strong	Sleepers awake; church bells ring	< 4.8
VI	Strong	Trees sway, suspended objects swing, objects fall off shelves	< 5.4
VII	Very Strong	Mild Alarm; walls crack; plaster falls	< 6.1
VIII	Destructive	Moving cars uncontrollable; masonry fractures, poorly constructed buildings damaged	
IX	Ruinous	Some houses collapse; ground cracks; pipes break open	< 6.9
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread	< 7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards	< 8.1
XII	Catastrophic	Total destruction, trees fall, ground rises and falls in waves	> 8.1

Source: FEMA, 2016

Location

According to the Iowa Department of Natural Resources, there are no major fault lines in Iowa.

Historical Occurrences

According to the United States Geological Survey (USGS), there have been zero earthquakes that have occurred in the planning area since 1900.

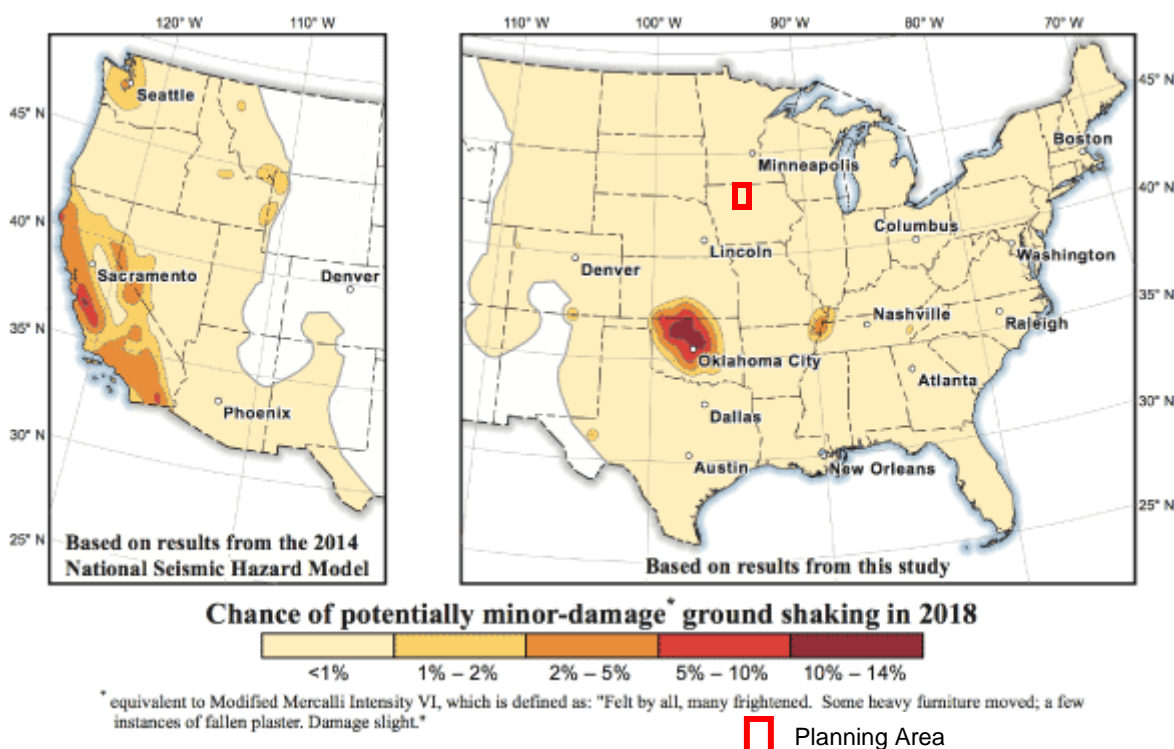
Extent

If an earthquake were to occur in the planning area, it would likely measure between 5.0 or less on the Richter Scale. Little to no damage is anticipated from events of these magnitudes.

Average Annual Losses

Due to zero historical earthquakes and low earthquake risk for the area, it is not feasible to utilize the 'event damage estimate formula' to estimate potential losses for the planning area. Figure 22 shows the probability of damage from earthquakes, according to the USGS. The figure shows that the planning area has a less than one percent chance of damages from earthquakes.

Figure 22: 2018 Probability of Damage from Earthquakes

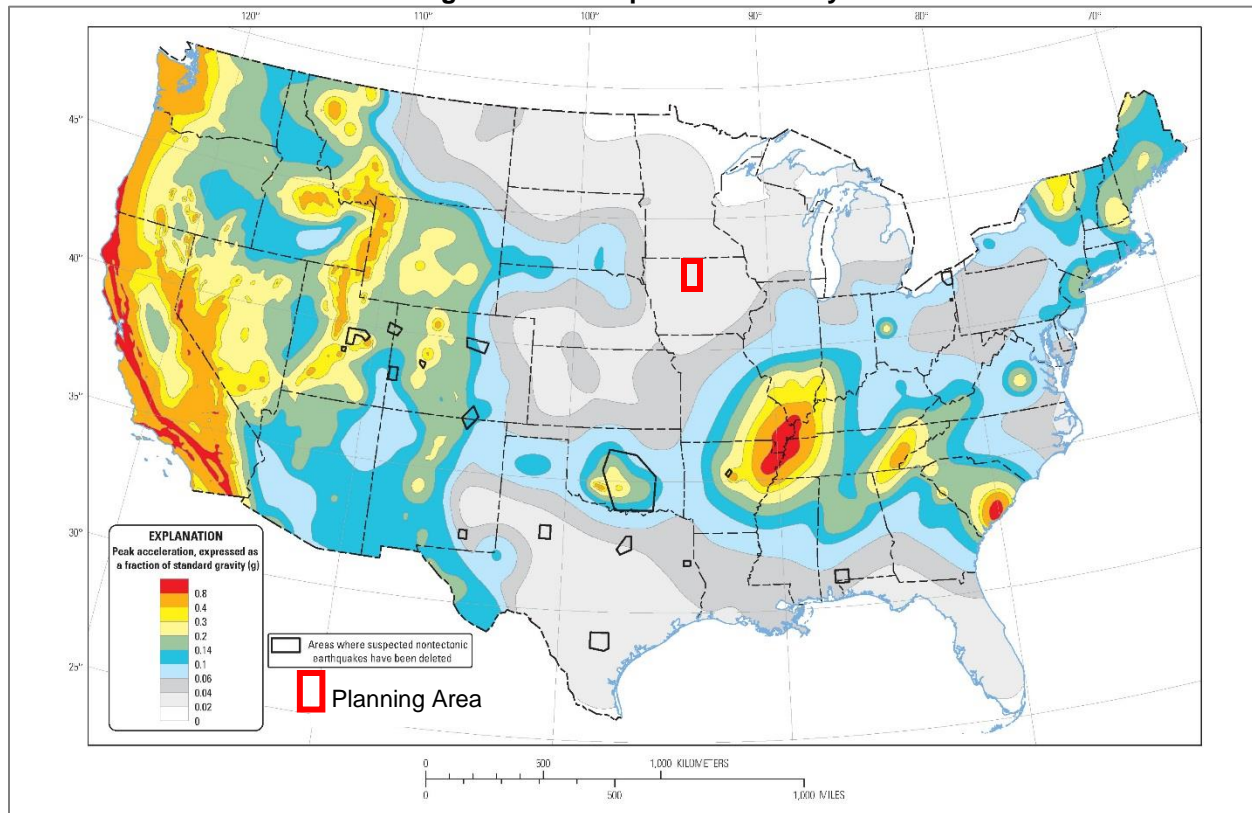


Source: USGS, 2018⁸⁴

Probability

The following figure visualizes the probability of a 5.0 or greater earthquake occurring in the planning area within 50 years. Based on zero occurrences of earthquakes over a 123-year period, the probability of an earthquake in the county in any given year is less than one percent.

⁸⁴ United States Geological Survey. 2018. "Short-term Induced Seismicity Models: 2018 One-Year Model." https://www.usgs.gov/natural-hazards/earthquake-hazards/science/short-term-induced-seismicity-models?qt-science_center_objects=0#qt-science_center_objects.

Figure 23: Earthquake Probability

Source: USGS 2009 PSHA Model

*Map shows the two-percent probability of exceedance in 50 years of peak ground acceleration.

Community Top Hazard Status

No jurisdictions identified Earthquake as a top hazard of concern.

Regional Vulnerabilities

The following table provides information related to regional vulnerabilities; for jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 63: Regional Earthquakes Vulnerabilities

Sector	Vulnerability
People	-Risk of injury or death from falling objects and structures
Economic	-Short term interruption of business
Built Environment	-Damage to buildings, homes, or other structures from foundation cracking, falling objects, shattered windows, etc.
Infrastructure	-Damage to subterranean infrastructure (i.e., waterlines, gas lines, etc.) -Damage to roadways
Critical Facilities	-Same as all other structures
Climate	-None

Extreme Temperatures (Heat/Cold)

Extreme Heat

Extreme heat is often associated with periods of drought but can also be characterized by long periods of high temperatures in combination with high humidity. During these conditions, the human body has difficulty cooling through the normal method of the evaporation of perspiration. Health risks arise when a person is overexposed to heat. Extreme heat can also cause people to overuse air conditioners, which can lead to power failures. Power outages for prolonged periods increase the risk of heat stroke and subsequent fatalities due to loss of cooling and proper ventilation. The planning area is largely rural, which presents an added vulnerability to extreme heat events; those suffering from an extreme heat event may be farther away from medical resources as compared to those living in an urban setting.

Along with humans, animals also can be affected by high temperatures and humidity. Cattle and other farm animals respond to heat by reducing feed intake, increasing their respiration rate, and increasing their body temperature. These responses assist the animal in cooling itself, but this is usually not sufficient. When animals overheat, they will begin to shut down body processes not vital to survival, such as milk production, reproduction, or muscle building.

Other secondary concerns connected to extreme heat hazards include water shortages brought on by drought-like conditions and high demand. Government authorities report that civil disturbances and riots are more likely to occur during heat waves. In cities, pollution becomes a problem because the heat traps pollutants in densely populated urban areas. Adding pollution to the stresses associated with the heat magnifies the health threat to the urban population.

The National Weather Service (NWS) is responsible for issuing excessive heat outlooks, excessive heat watches, and excessive heat warnings.

- **Excessive heat outlooks** are issued when the potential exists for an excessive heat event in the next three to seven days. Excessive heat outlooks can be utilized by public utility staffs, emergency managers, and public health officials to plan for extreme heat events.
- **Excessive heat watches** are issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours.
- **Excessive heat warnings** are issued when an excessive heat event is expected in the next 36 hours. Excessive heat warnings are issued when an extreme heat event is occurring, is imminent, or has a very high probability of occurring.

Extreme Cold

Prolonged exposure to cold causes the human body to lose heat faster than it can be produced and use up the body's stored energy. As a result, abnormally low body temperature can lead to hypothermia. Frostbite is another symptom of prolonged cold exposure that causes a loss of feeling and color in affected areas of the body. Frostbite most often affects the nose, ears, cheeks, chin, fingers, or toes and can permanently damage body tissues.

The NWS also posts watches and warnings during anticipated dangerous cold wind chill values.

- **Wind chill advisories** are issued when seasonably cold wind chill values, but not extremely cold values are expected or occurring.
- **Wind chill watches** are released when dangerously cold wind chill values are possible.
- **Wind chill warnings** are issued when dangerously cold wind chill values are expected or occurring.

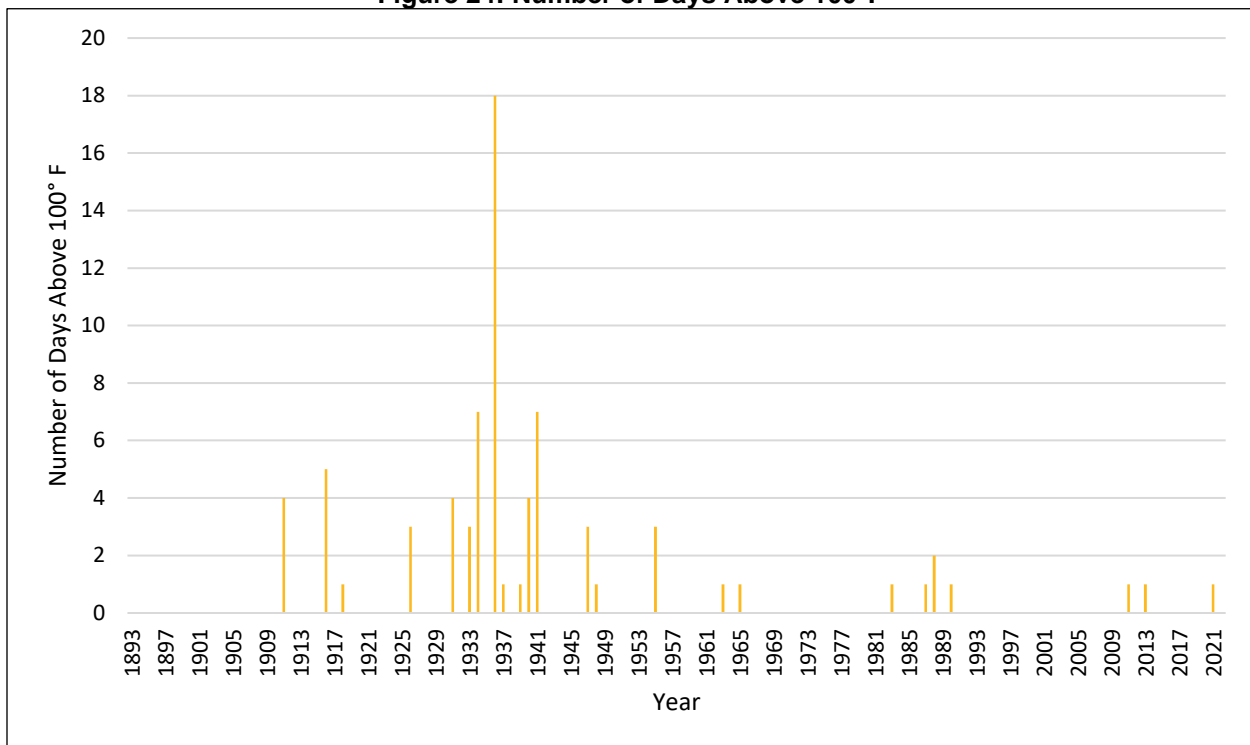
Location

The entire county is susceptible to extreme heat and cold impacts.

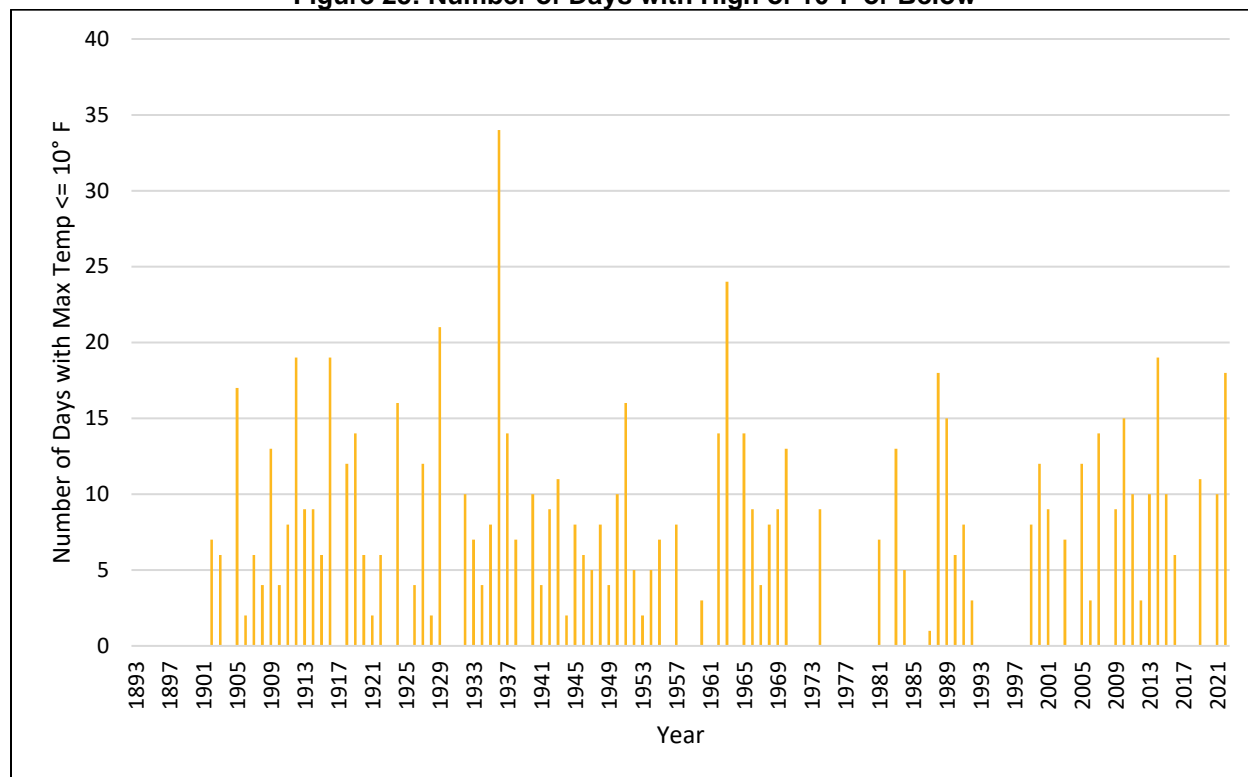
Historical Occurrences

According to the High Plains Regional Climate Center (HPRCC), on average, the county experiences one day above 100°F per year. The county experienced the most days on record above 100°F in 1936 with 18 days (Figure 24). Conversely, the planning area experiences an annual average of nine days with a high of 10°F or below and saw the most days below 10°F in 1936 with 34 days (Figure 25).

Figure 24: Number of Days Above 100°F



Source: HPRCC, 1893 – 2022

Figure 25: Number of Days with High of 10°F or Below

Source: HPRCC, 1893 – 2022

Extent (Extreme Heat)

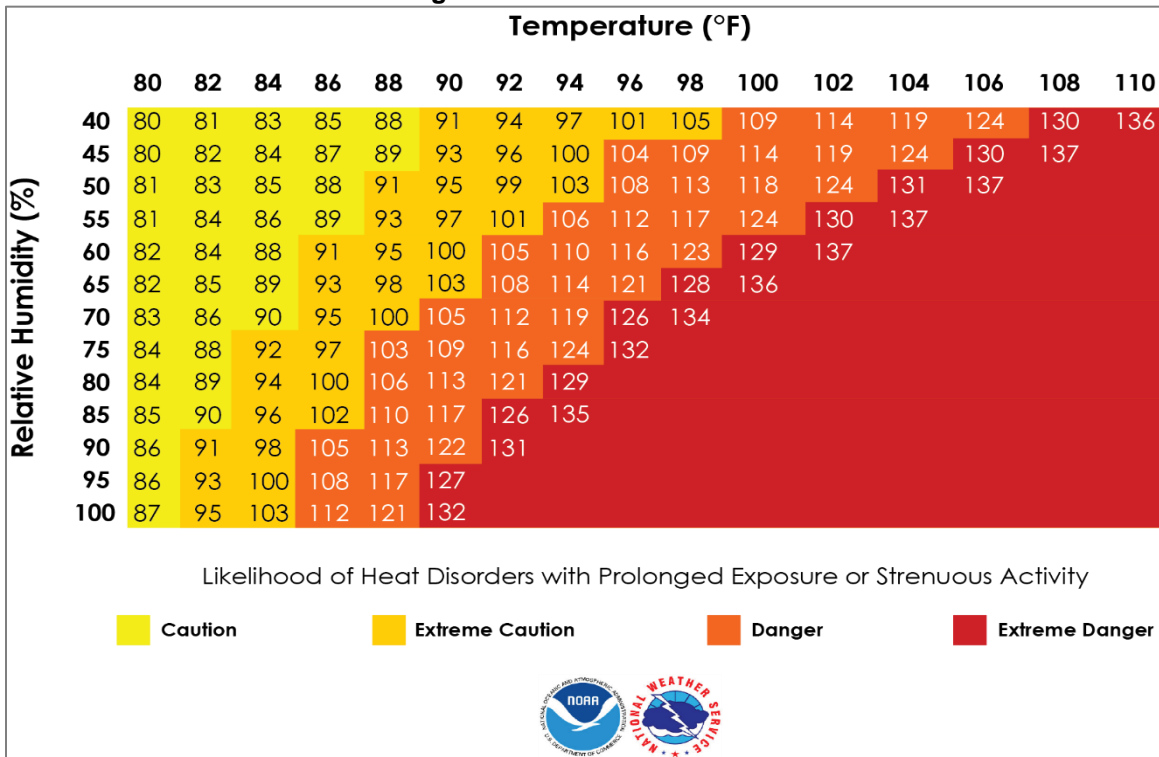
A key factor to consider regarding extreme heat situations is the humidity level relative to the temperature. As is indicated in the following figure from the National Oceanic and Atmospheric Administration (NOAA), as the relative humidity increases, the temperature needed to cause a dangerous situation decreases. For example, for 100% relative humidity, dangerous levels of heat begin at 86°F whereas a relative humidity of 50% require 94°F. The combination of relative humidity and temperature result in a heat index as demonstrated below:

$$100\% \text{ Relative Humidity} + 86^{\circ}\text{F} = 112^{\circ}\text{F Heat Index}$$

Figure 26 is designed for shady and light wind conditions. Exposure to full sunshine or strong winds can increase hazardous conditions and raise heat index values by up to 15°F. For the purposes of this plan, extreme heat is defined as temperatures of 100°F or greater. In the planning area, the months with the highest temperatures are June, July, and August (Figure 27). The average high for these three months is 81.3 °F.⁸⁵

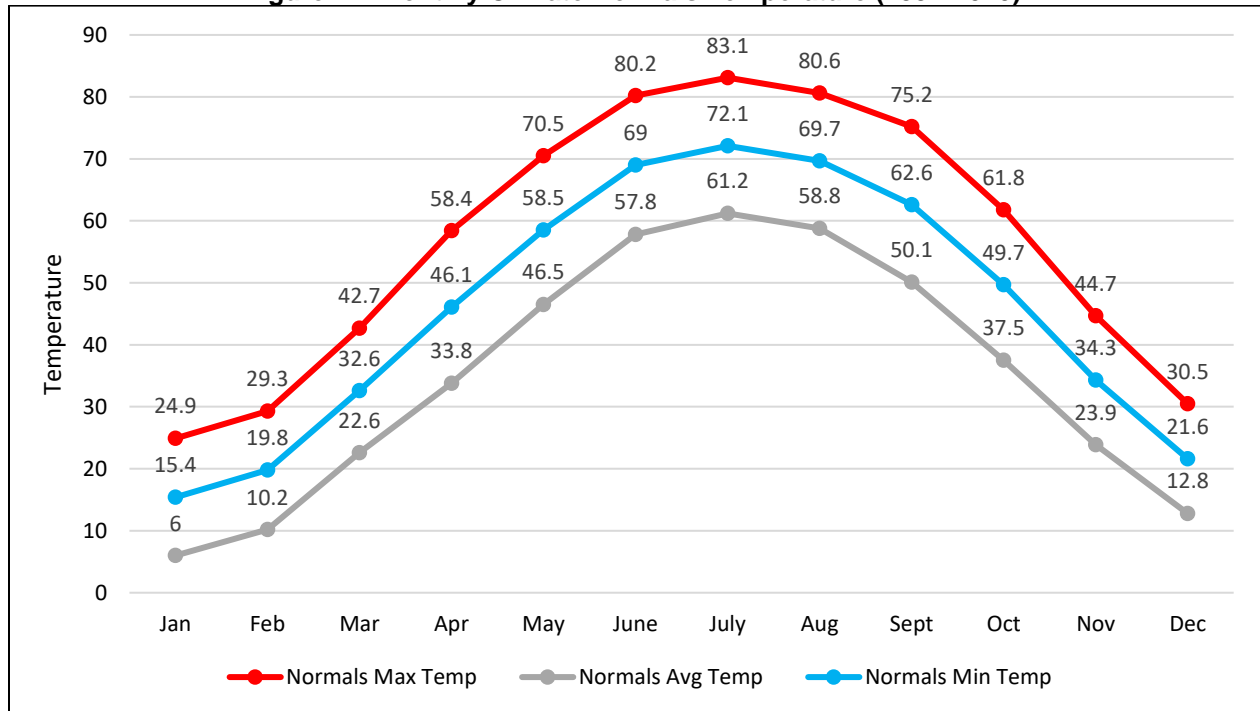
⁸⁵ NOAA National Centers for Environmental Information. April 2023. "Data Tools: 1991-2020 Normals." [datafile]. <https://www.ncdc.noaa.gov/cdo-web/datatools/normals>.

Figure 26: NOAA Heat Index



Source: NOAA, 2017⁸⁶

Figure 27: Monthly Climate Normals Temperature (1991-2020)



Source: NCEI, 2023

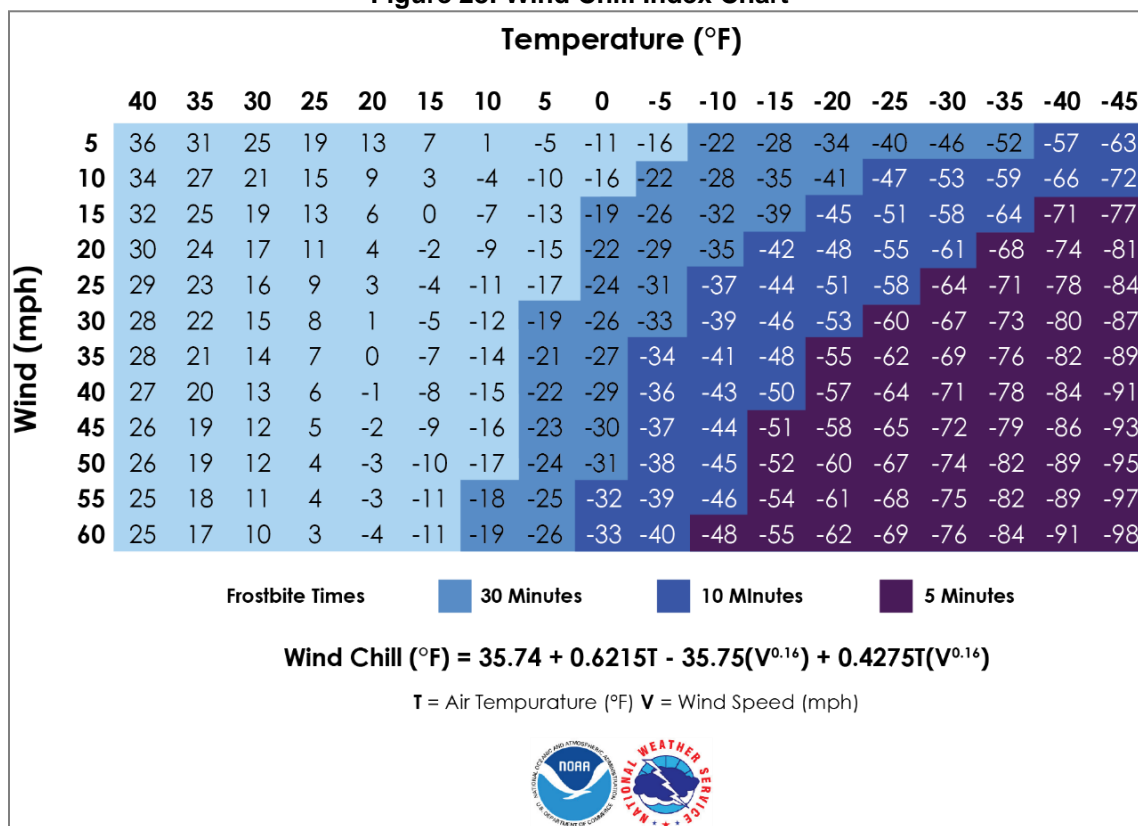
⁸⁶ National Oceanic and Atmospheric Administration, National Weather Service. 2017. "Heat Index."
http://www.nws.noaa.gov/om/heat/heat_index.shtml.

Extent (Extreme Cold)

Along with snow and ice storm events, extreme cold is dangerous to the well-being of people and animals. What constitutes extreme cold varies from region to region but is generally accepted as temperatures that are significantly lower than the region's average low temperature. For the purposes of this plan, extreme cold is defined as the high temperature being 10°F or below. For the planning area, the coldest months of the year are December, January, and February (Figure 27). The average low for these three months is 9.7°F.⁸⁷

The NWS developed the Wind Chill Index to determine the decrease in air temperature felt by the body on exposed skin due to wind. The wind chill is always lower than the air temperature and can quicken the effects of hypothermia or frost bite as it gets lower. Figure 28 shows the Wind Chill Index used by the NWS.

Figure 28: Wind Chill Index Chart



Source: NWS, 2017⁸⁸

Average Annual Losses

The annual property estimate was determined based upon NCEI Storm Events Database since 1996. The annual crop loss was determined based upon the RMA Cause of Loss Historical Database since 2000. This does not include losses from displacement, functional downtime, economic loss, injury, or loss of life. The direct and indirect effects of extreme temperatures are difficult to quantify. Potential losses such as power outages could affect businesses, homes, and

⁸⁷ NOAA National Centers for Environmental Information. April 2023. "Data Tools: 1991-2020 Normals." [datafile].

<https://www.ncdc.noaa.gov/cdo-web/datatools/normals>.

⁸⁸ National Weather Service. 2001. "Wind Chill Chart." http://www.nws.noaa.gov/om/cold/wind_chill.shtml.

critical facilities. High demand and intense use of HVAC systems or water pumps can overload the electrical systems and damage infrastructure.

Table 64: Loss Estimate for Extreme Heat

Hazard Type	Avg. Number of Days Above 100°F ¹	Total Property Loss ²	Average Annual Property Loss ²	Total Crop Loss ³	Average Annual Crop Loss ³
Extreme Heat	1 day	\$135,000	\$5,000	\$674,569	\$29,329

Source: 1 HPRCC (1893 – 2022); 2 Indicates data is from NCEI (1996 - 2022); 3 Indicates data is from USDA RMA (2000 - 2022)

Table 65: Loss Estimate for Extreme Cold

Hazard Type	Avg. Number of Days with Max Temp ≤10°F ¹	Total Property Loss ²	Average Annual Property Loss ²	Total Crop Loss ³	Average Annual Crop Loss ³
Extreme Cold	9 days	\$0	\$0	\$12,905	\$561

Source: 1 HPRCC (1893 – 2022); 2 Indicates data is from NCEI (1996 - 2022); 3 Indicates data is from USDA RMA (2000 - 2022)

Estimated Loss of Electricity

According to the FEMA Benefit Cost Analysis Reference Guide, if an extreme heat event occurred within the planning area, the following table assumes the event could potentially cause a loss of electricity for 10% of the population at a cost of \$174 per person per day.⁸⁹ In rural areas, the percent of the population affected, and duration may increase during extreme events. The assumed damages do not take into account physical damages to utility equipment and infrastructure.

Table 66: Loss of Electricity - Assumed Damage

Jurisdiction	2020 Population	Population Affected (Assumed)	Electric Loss of Use Assumed Damage Per Day
Kossuth County	14,828	1,483	\$258,042

Probability

Extreme temperatures are a regular part of the climate for the planning area. Extreme heat events having at least one day of 100°F occurred in 24 out of 130 years. The probability that extreme heat will occur in any given year in the planning area is 18 percent. Extreme cold events having at least one day with a high at or below 10°F occurred in 85 out of 130 years. The probability that extreme cold will occur in any given year in the planning area is 65 percent.

The Union for Concerned Scientists released a report in July 2019 titled *Killer Heat in the United States: Climate Choices and the Future of Dangerously Hot Days*⁹⁰ which included predictions for extreme heat events in the future dependent on future climate actions. The table below summarizes those findings for the planning area.

⁸⁹ Federal Emergency Management Agency. July 2020. "FEMA Benefit-Cost Analysis (BCA) Toolkit 6.0 Release Notes." https://www.fema.gov/sites/default/files/2020-08/fema_bca_toolkit_release-notes-july-2020.pdf.

⁹⁰ Union of Concerned Scientists. 2019. "Killer Heat in the United States: Climate Choices and the Future of Dangerously Hot Days." <https://www.ucsusa.org/sites/default/files/attach/2019/07/killer-heat-analysis-full-report.pdf>.

Table 67: Extreme Heat Predictions for Days over 100°F

Jurisdiction	Midcentury Prediction 2036-2065 (days per year)	Late Century Prediction 2070-2099 (days per year)
Kossuth County	23	47

Source: Union of Concerned Scientists, 1971-2000⁹¹

Community Top Hazard Status

The following table lists jurisdictions which identified Extreme Temperatures as a top hazard of concern:

Jurisdictions	
Burt	Lu Verne

Regional Vulnerabilities

The following table provides information related to regional vulnerabilities. For jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 68: Regional Extreme Heat Vulnerabilities

Sector	Vulnerability
People	<ul style="list-style-type: none"> -Heat exhaustion -Heat stroke -Hypothermia -Heart Disease -Asthma <p>Vulnerable populations include:</p> <ul style="list-style-type: none"> -People working outdoors -People without air conditioning or heat -Young children outdoors or without air conditioning or heat -Elderly outdoors or without air conditioning or heat
Economic	<ul style="list-style-type: none"> -Short-term interruption of business -Loss of power -Agricultural losses
Built Environment	<ul style="list-style-type: none"> -Damage to HVAC systems if overworked
Infrastructure	<ul style="list-style-type: none"> -Damages to roadways (prolonged extreme events) -Stressing electrical systems (brownouts during peak usage) -Stressing water systems
Critical Facilities	<ul style="list-style-type: none"> -Loss of power
Climate	<ul style="list-style-type: none"> -Increased risk of wildfire events -Increases in extreme heat conditions are likely, adding stress on livestock, crops, people, and infrastructure -Increases in extreme cold conditions are likely, adding stress on electrical systems, people, and infrastructure

⁹¹ Union of Concerned Scientists. 2023. "Extreme Heat and Climate Change: Interactive Tool".
<https://www.ucsusa.org/resources/killer-heat-interactive-tool?location=kossuth-county--ia>.

Flooding

Flooding can occur on a local level, sometimes affecting only a few streets, but can also extend throughout an entire district, affecting whole drainage basins and impacting people and property in multiple states. Heavy accumulations of ice or snow can also cause flooding during the melting stage. These events are complicated by the freeze/thaw cycles characterized by moisture thawing during the day and freezing at night. There are four main types of flooding: riverine flooding, flash flooding, stormwater flooding, and ice jam flooding.

Riverine Flooding

Riverine flooding, typically slower developing with a moderate to long warning time, is defined as the overflow of rivers, streams, drains, and lakes due to excessive rainfall, rapid snowmelt or ice melt. The areas adjacent to rivers and stream banks that carry excess floodwater are called floodplains. A floodplain or flood risk area is defined as the lowland and relatively flat area adjoining a river or stream. The terms “base flood” and “100-year flood” refer to the area in the floodplain that is subject to a one percent or greater chance of flooding in any given year. Floodplains are part of a larger entity called a basin or watershed, which is defined as all the land draining to a river and its tributaries.

Flash Flooding

Flash floods, typically rapidly developing with little to no warning time, result from convective precipitation usually due to intense thunderstorms or sudden releases due to a failure of an upstream impoundment created behind a dam, landslide, or levee. Flash floods are distinguished from regular floods by a timescale of fewer than six hours. Flash floods cause the most flood-related deaths because of this shorter timescale. Flooding from excessive rainfall events in Iowa usually occurs between late spring and early fall.

Stormwater Flooding

In some cases, flooding may not be directly attributable to a river, stream, or lake overflowing its banks. Rather, it may simply be the combination of excessive rainfall or snowmelt, saturated ground, and inadequate drainage capacity. With no place to go, the water will find the lowest elevations – areas that are often not in a floodplain. This type of flooding, often referred to as stormwater flooding, is becoming increasingly prevalent as development exceeds the capacity of drainage infrastructure, therefore limiting its ability to convey stormwater. Flooding also occurs due to combined storm and sanitary sewers being overwhelmed by the high flows that often accompany storm events. Typical impacts range from dangerously flooded roads to water backing up into homes or basements, which damages mechanical systems and can create serious public health and safety concerns.

Ice Jam Flooding

Ice jams occur when ice breaks up in moving waterways, and then stacks on itself where channels narrow, or human-made obstructions constrict the channel. This creates an ice dam, often causing flooding within minutes of the dam formation. Ice formation in streams occurs during periods of cold weather when finely divided colloidal particles called “frazil ice” form. These particles combine to form what is commonly known as “sheet ice.” This type of ice covers the entire river. The thickness of this ice sheet depends upon the degree and duration of cold weather in the area. This ice sheet can freeze to the bottom of the channel in places. During spring thaw or winter freezing, rivers frequently become clogged with this winter accumulation of ice. Because of relatively low stream banks and channels blocked with ice, rivers overtop existing banks and

flow overland. This type of flooding tends to occur more frequently on wide, shallow rivers, although other rivers can be impacted.

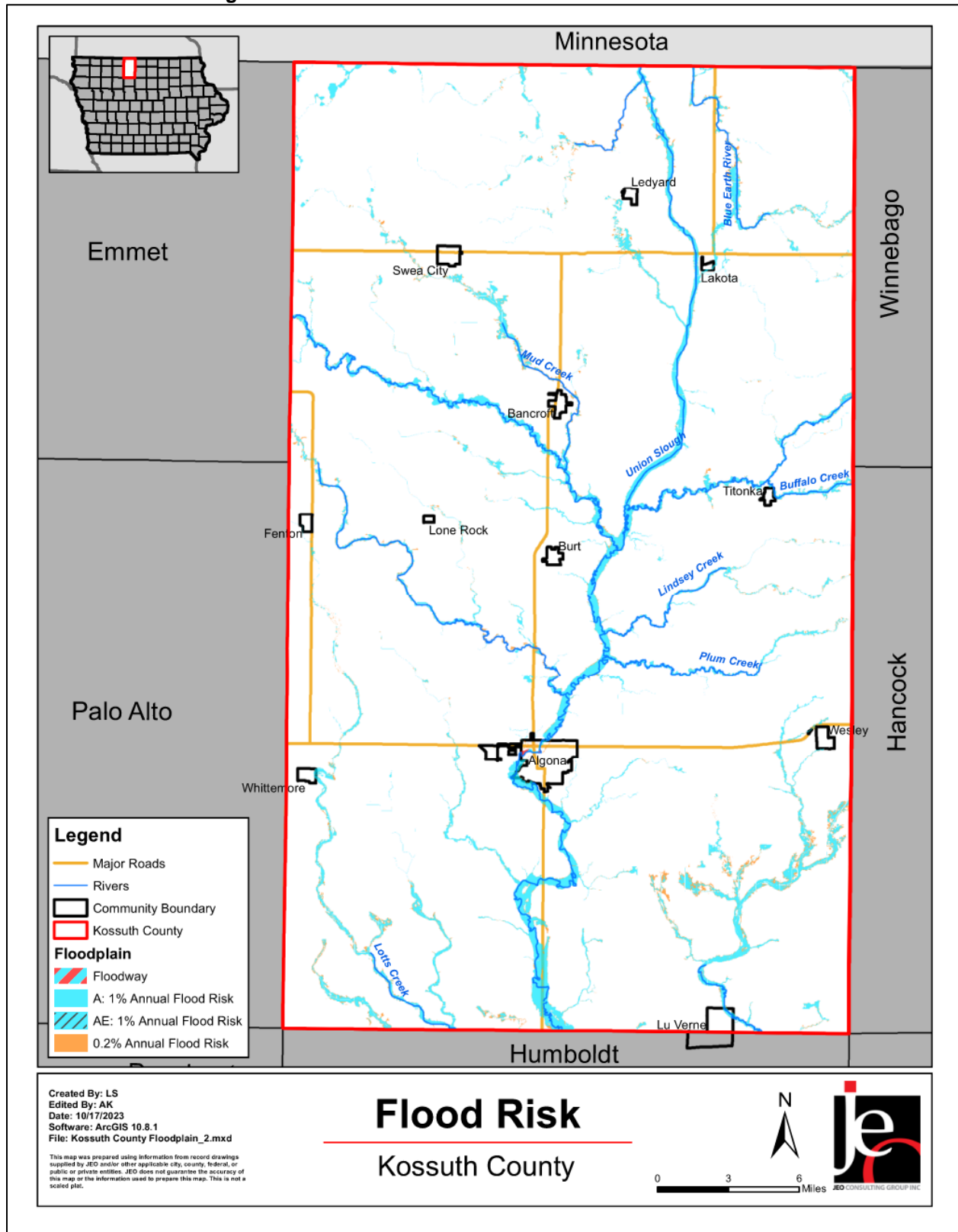
Location

The county resides in the East Fork Des Moines, Blue Earth, and Boone watersheds. Main waterways in the planning area include the East Fork Des Moines River and the Blue Earth River. The county is also home to the Union Slough National Wildlife Refuge in central Kossuth County, which includes a number of waterbodies such as Smith Pool. These rivers, their tributaries, and lakes are potential locations for flooding to occur.

Kossuth County has 63 Flood Insurance Rate Map (FIRM) panels according to FEMA. For additional details on localized flood risk such as flood zone types, please refer to the official FIRM available from FEMA's Flood Map Service Center.⁹² Figure 29 shows the modeled floodplain for the county. For jurisdictional-specific maps as well as an inventory of structures in the floodplain, please refer to *Section Seven: Community Profiles*.

⁹² Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed August 2023.
<http://msc.fema.gov/portal/advanceSearch>.

Figure 29: 1% and 0.2% Annual Flood Risk Hazard Areas



Risk Map Products

Risk Mapping, Assessment, and Planning (Risk MAP) is a FEMA program that provides communities with flood information and additional flood risk data (e.g., flood depth grids, percent chance grids, areas of mitigation interest, etc.) that can be used to enhance their mitigation plans and take action to better protect their citizens. There are currently no Risk MAP products or projects in the planning area.⁹³

According to the Iowa Department of Natural Resources, Kossuth County underwent other flood risk reduction projects, including LiDAR data collection and 2D base level engineering activities.⁹⁴

The Iowa Flood Center hosts flood risk maps on an interactive web map that contains tools for analyzing scour-prone areas, flood risk gradients, and flood depths.

The interactive flood risk maps can be viewed at:

<https://ifis.iowafloodcenter.org/ifis/newmaps/risk/map/>.

Extent

The NWS has three categories to define the severity of a flood once a river reaches flood stage as indicated in Table 69.

Table 69: Flooding Stages

Flood Stage	Description of Flood Impacts
Minor Flooding	Minimal or no property damage, but possibly some public threat or inconvenience
Moderate Flooding	Some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations are necessary
Major Flooding	Extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations

Source: NOAA, 2017⁹⁵

Figure 30 shows the normal average monthly precipitation for the planning area, which is helpful in determining whether any given month is above, below, or near normal in precipitation. As indicated in Figure 31, the most common months for flooding within the planning area are May and June.

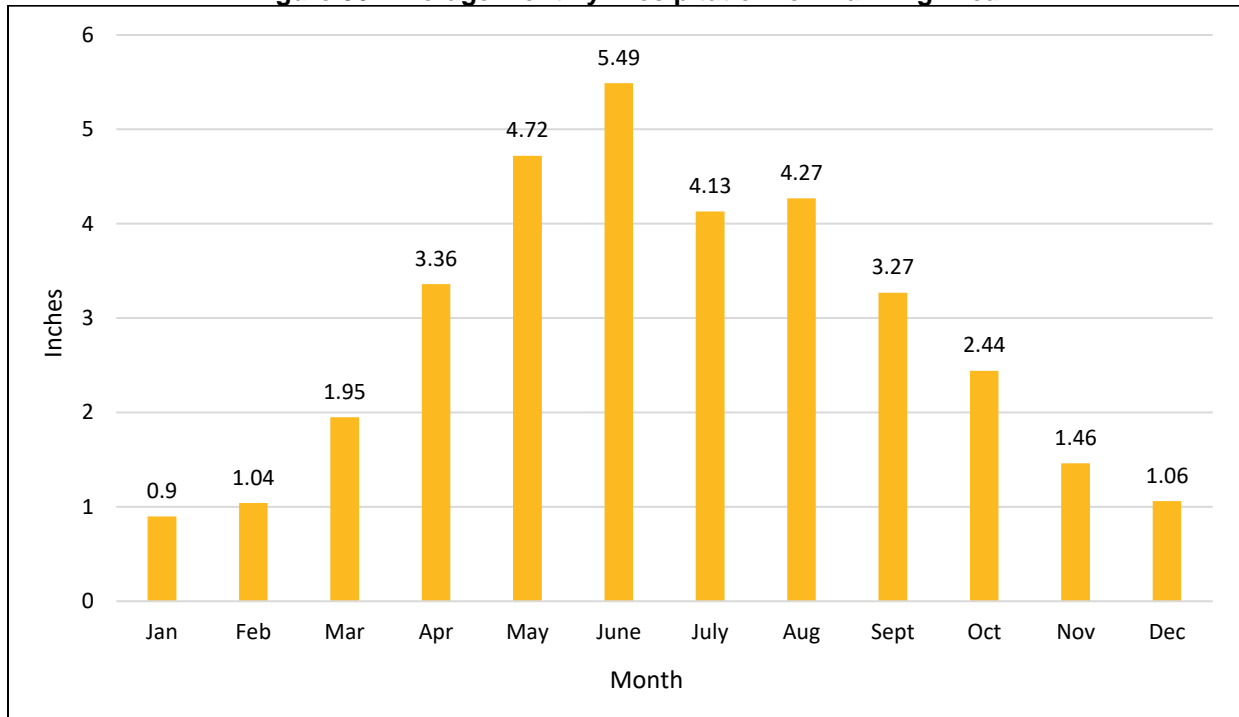
⁹³ Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed August 2023.

<http://msc.fema.gov/portal/advanceSearch>.

⁹⁴ Iowa Department of Natural Resources. 2023. "Flood Plain Mapping." <https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Flood-Plain-Management/Flood-Plain-Mapping>.

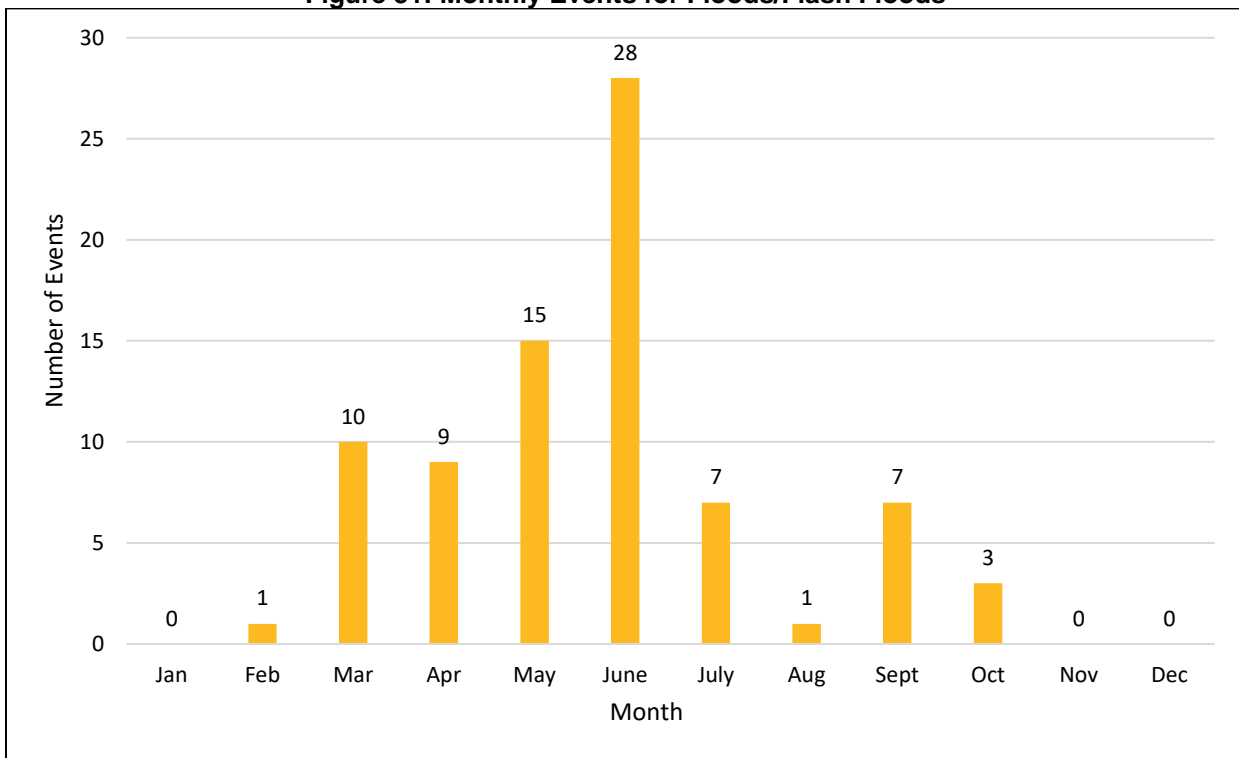
⁹⁵ National Weather Service. 2017. "Flood Safety." <https://www.weather.gov/safety/flood>.

Figure 30: Average Monthly Precipitation for Planning Area



Source: NCEI, 1991-2020⁹⁶

Figure 31: Monthly Events for Floods/Flash Floods



Source: NCEI, 1996-2022

⁹⁶ NOAA National Centers for Environmental Information. April 2023. "Data Tools: 1991-2020 Normals." [datafile]. <https://www.ncdc.noaa.gov/cdo-web/datatools/normals>.

National Flood Insurance Program (NFIP)

The NFIP was established in 1968 to reduce flood losses and disaster relief costs by guiding future development away from flood hazard areas where feasible; by requiring flood resistant design and construction practices; and by transferring the costs of flood losses to the residents of floodplains through flood insurance premiums.

In return for availability of federally backed flood insurance, jurisdictions participating in the NFIP must agree to adopt and enforce floodplain management standards to regulate development in special flood hazard areas as defined by FEMA's flood maps. One of the strengths of the program has been keeping people away from flooding rather than keeping the flooding away from people—through historically expensive flood control projects. The following tables summarize NFIP participation and active policies within the planning area.

Table 70: NFIP Participants

Jurisdiction	Participate in NFIP	Eligible-Regular Program	Date Current Map	Sanction	Suspension	Rescinded
Kossuth County	Y	5/1/1992	3/20/2018	-	-	-
Algona	Y	6/1/1983	3/20/2018	-	-	-
Bancroft	Y	9/1/1987	(NSFHA)	-	-	-
Burt	N	-	-	-	-	-
Fenton	Y	7/1/1997	3/20/2018(M)	-	-	-
Lakota	N	3/19/1977	3/20/2018	-	-	-
Ledyard	N	-	-	-	-	-
Lone Rock	N	-	-	-	-	-
Lu Verne	Y	5/1/2011	11/3/2017	-	-	-
Swea City	N	-	-	-	-	-
Titonka	Y	9/1/1987	3/20/2018(M)	-	-	-
Wesley	Y	3/29/2019	3/20/2018(M)	-	-	-
Whittemore	N	3/20/2019	3/20/2018	-	-	-

Source: Federal Emergency Management Agency, National Flood Insurance Program, 2023⁹⁷

*(M) indicates no elevation determined – All Zone A, C, and X; (L) indicates original FIRM by Letter – All Zone A, C, and X; (E) indicates entry in Emergency Program; (NSFHA) indicates No Special Flood Hazard Area – All Zone C

The NFIP Emergency Program allows a community to voluntarily participate in the NFIP if no flood hazard information is available for their area; the community has a Flood Hazard Boundary Map but no FIRM; or the community has been identified as flood-prone for less than a year.

⁹⁷ Federal Emergency Management Agency. 2023. "Community Status Book Report." Accessed May 2023.
<https://www.fema.gov/cis/IA.html>

Table 71: NFIP Policies in Force and Total Payments

Jurisdiction	Policies In-force	Total Coverage	Total Premiums	Total Losses	Total Payments
Kossuth County	2	\$355,000	\$869	0	-
Algona	5	\$2,601,000	\$13,362	1	\$21,558

Source: NFIP HUDEX, September 2023

This plan highly recommends and strongly encourages plan participants to enroll, participate, and remain in good standing with the NFIP. Compliance with the NFIP should remain a top priority for each participant. Jurisdictions are encouraged to initiate activities above the minimum participation requirements, which are described in the Community Rating System (CRS) Coordinator's Manual.⁹⁸ Currently no jurisdictions in the planning area participate in the CRS program.

NFIP Repetitive Loss Structures

IDNR was contacted to determine if any existing buildings, infrastructure, or critical facilities are classified as NFIP Repetitive Loss Structures. As of July 2023, there are no repetitive loss properties or severe repetitive loss properties located in the county. Definitions of a structure identified as an NFIP Repetitive Loss (RL) and Severe Repetitive Loss (SRL) are given below.

NFIP RL: Repetitive Loss Structure refers to a structure covered by a contract for flood insurance under the NFIP that has incurred flood-related damage on two occasions during a 10-year period, each resulting in at least a \$1,000 claim payment.

NFIP SRL: Severe Repetitive Loss Properties are defined as single or multifamily residential properties that are covered under an NFIP flood insurance policy and:

- (1) That have incurred flood-related damage for which four or more separate claims payments have been made, with the amount of each claim (including building and contents payments) exceeding \$5,000, and with the cumulative amount of such claim payments exceeding \$20,000; or
- (2) For which at least two separate claims payments (building payments only) have been made under such coverage, with cumulative amount of such claims exceeding the market value of the building.
- (3) In both instances, at least two of the claims must be within 10 years of each other, and claims made within 10 days of each other will be counted as one claim.

HMA RL: A repetitive loss property is a structure covered by a contract for flood insurance made available under the NFIP that:

- (1) Has incurred flood-related damage on two occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such food event; and

⁹⁸ Federal Emergency Management Agency. 2017. "National Flood Insurance Program Community Rating System: Coordinator's Manual FIA-15/2017." Accessed June 2022. https://www.fema.gov/sites/default/files/documents/fema_community-rating-system_coordinators-manual_2017.pdf.

- (2) At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

HMA SRL: A severe repetitive loss property is a structure that:

- (1) Is covered under a contract for flood insurance made available under the NFIP.
- (2) Has incurred flood related damage –
 - (a) For which four or more separate claims payments (includes building and contents) have been made under flood insurance coverage with the amount of each such claim exceeding \$5,000, and with the cumulative amount of such claim payments exceeding \$20,000; or
 - (b) For which at least two separate claims payments (includes only building) have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the insured structure.

Purpose of the HMA definitions: The HMA definitions were allowed by the Biggert-Waters Flood Insurance Reform Act of 2012 to provide an increased federal cost share under the FMA grant when a property meets the HMA definition.

Historical Occurrences

The NCEI reports events as they occur in each community. A single flooding event can affect multiple communities and counties at a time; the NCEI reports these large scale, multi-county events as separate events. The result is a single flood event covering a large portion of the planning area could be reported by the NCEI as several events. According to the NCEI, 22 flash flooding events resulted in \$1,280,000 in property damage, while 59 riverine flooding events resulted in \$3,709,500 in property damage. USDA RMA data does not distinguish the difference between riverine flooding damages and flash flooding damages. The total crop loss according to the RMA is \$207,267. Descriptions of the most damaging flood events from the NCEI are below:

- **June 8, 2008 – Flood – Burt:** *Heavy rain fell once again across a large part of Iowa, especially across the north and northeast. This rain fell on rivers that were already close to flood stage as they were just beginning to fall after the flooding from earlier in the month. The rainfall of the first week of June set the state for what would become record flooding over a large part of the northeast half of Iowa, even eclipsing the records set just 15 years previous in 1993. Damage became widespread, both to property and infrastructure as well as agriculturally. More details of the record rains will be included with the next event, which occurred just a couple days later.*
- **July 9, 2000 – Flash Flood – Southern Kossuth County:** *A nearly stationary frontal boundary was located to the north of Iowa during the day on the 9th. Very rich air was pumped north into the state with surface dew point temperatures reaching the mid-70s to low 80s by the late afternoon and evening hours. The front began to sag south during the evening. Thunderstorms erupted along the front with a training effect setting up over the northern part of the state. Severe weather was limited with the storms and occurred mainly during the early life of the developing mesoscale convective system. There were several reports of winds around 60 MPH over northern Iowa during the evening hours as the storms moved in initially. In Palo Alto County, winds around 75 MPH caused considerable damage on a farm south of Ruthven. Part of the roof of the house was torn off, a cattle shed was severely damaged, and many trees were lost or damaged. The main event with these storms was the very heavy rain. Rainfall of five to eight inches was common in a broad swath from Emmet County, southeast to Tama County. Some of the heaviest rainfall occurred in*

southern Kossuth County, where as much as 10 inches of rain was measured. About 40 homes in the town of LuVerne were damaged by the wind driven rain with numerous basements flooded. Nearly all the county blacktop roads were under water at one point. There were numerous reports of debris being swept onto roads. For example, in Black Hawk County water was reported 2 to 3 feet deep on major streets in the town of Cedar Falls. Numerous roads were reported in a multi-county area. One injury occurred during the event in Grundy County. Highway 175 was closed near Reinbeck as water swept a truck off the highway. One man was injured and taken to the hospital. In addition to flooded roads, numerous basements were flooded. In Kossuth County for example, many houses were reporting anywhere from two to six feet of water in the basements. Crop damage occurred as farm fields were flooded by the heavy rainfall. This seemed ironic considering much of Iowa was in the grips of the worst drought since the 80s as recently as three weeks prior to this event. As the thunderstorms moved through Kossuth County, lightning struck a house north of Bancroft. The lightning knocked out the electricity to the house and causing some minor appliance damage. Another house was struck in Cerro Gordo County at Meservey. The lightning started a small fire near the rafters. Some smoke damage occurred, along with considerable water damage. In another lightning strike, lightning struck a tree near a house in Sully of Jasper County. The lightning traveled through one of the roots of the tree and blew a hole in the driveway and curled up the metal trim on the garage. All the brooms and tools within the garage were knocked onto the floor.

- June 21, 2018 – Flood – Whittemore and Lu Verne:** The East Fork of the Des Moines River at Algona crested twice through the period of flooding. The first crest was 18.69 feet on 22 June 2018 at 22:15 UTC, the second crest was 19.33 feet on 26 June 2018 at 10:45 UTC. ||Without even looking at supporting variables, the setup for impactful weather could be gleaned from the general setup. A weak surface pressure system was slowly working its way across Iowa, situating its relevant boundaries primarily across southwest and southern Iowa. Within the warm sector, dew points were high in the low to mid 70s, especially considering afternoon air temperatures were only into the low 80s. Even north of the warm front and west of the cold front, the air mass was ripe for at least the potential for sustained rainfall with surface dew points in the upper 60s to low 70s. ||Looking at the details, both heavy rainfall and tornadoes appeared in play. First, within the warm sector, MUCAPE values were within the 1000 to 2000+ J/kg neighborhood, lifted condensation levels were under 750 m, 0-3 km CAPE was around or in excess of 100 J/kg, effective shear was mediocre away from the fronts, and surface vorticity was present. North of and wrapping around the surface low, any support for severe weather was understandably lackluster given its location but had the potential for sustained periods of moderate to heavy rainfall given the humid environment and slow moving surface low. ||Given the setup, there were concerns for flooding issues, especially given previous rainfalls in the month and moist soils, and severe weather including funnel clouds and weak tornadoes. What transpired was heavy rainfall and flooding in and around northwest Iowa and then multiple funnel cloud and weak tornado reports in central and southeast Iowa. In total, 4 weak tornadoes were confirmed.
- May 22, 2004 – Flood – Kossuth County:** May 2004 began rather dry with an average of only 0.19 inches of rain over the first week of the month. However, the second week of May brought seasonally normal rainfall. Heavy rain occurred during the third week of the month. May's greatest rain events came back to back. The first round of heavy rain producing thunderstorms began on the morning of the 21st and continued into the morning of the 22nd. Heaviest rains were in North Central and Northeast Iowa where storm totals included 4.75 inches at Emmetsburg, 6.22 inches at Mason City, and 5.14 inches at Decorah. Another round of storms began on the afternoon of the 22nd and continued into the morning of the 23rd. Some of the rain totals reported with this second series of storms included 6.67 inches near Ames and 4.15 inches at Marshalltown. A statewide average of 2.97 inches of rain fell from these two systems. Locally heavy rain continued to fall through much of the remainder of the month. The greatest rainfall amount occurred during the early morning hours of the 30th when 4.37 inches of rain fell at Fairfield. Damage reports were still coming in, but it does appear from preliminary reports that roughly six percent of Iowa's 2004 crop was flood out. Based on a \$23 per acre cost to replant it is estimated that the floods have cost Iowa farmers some \$15.2 million dollars. The rainfall that occurred over the later part of May

was Iowa's greatest since July 1993. Rainfall totals for the month varied from 4.01 inches at Burlington to 14.87 inches at Lansing. Radar derived estimates suggest that May rainfall was actually below normal in some areas over the far Northwest...such as Buena Vista and Van Buren Counties. However, complete rain gage reports were not yet available for these areas. Excessive rainfall produced major flooding in many areas across the state during the second half of May. This was the first widespread major flood event in many years. The heaviest rainfall occurred over the Northeastern sections of the state. Additionally, several episodes of severe thunderstorms produced large hail, high winds, and tornadoes during May. Severe weather was reported on 15 days during the month with all but 7 of Iowa's 99 counties reporting severe thunderstorm events. The month's largest severe weather outbreaks occurred on the 8th (26 counties, mostly west central to northeast); 17th (20 counties, mostly southwest to east central); 21st (37 counties, mostly northwest to east central); 22nd (31 counties, mostly southwest to east central) and the 24th (33 counties, mostly southwest one half). An exact tornado count is not yet available for the state, but central Iowa did report 32 tornadoes for the month with an estimated total of 50 tornadoes statewide. Nearly all were F0 and F1 intensity with minimal damage to communities. There was a tornado of F2 intensity that did produce significant damage to the communities of Bradgate and Palo (both on May 21).

Average Annual Damages

The average damage per event estimate was determined based upon NCEI Storm Events Database since 1996 and the number of historical occurrences. This does not include losses from displacement, functional downtime, economic loss, injury, or loss of life. Flooding causes an average of \$184,796 in property damages and \$9,012 in crop losses per year for the planning area.

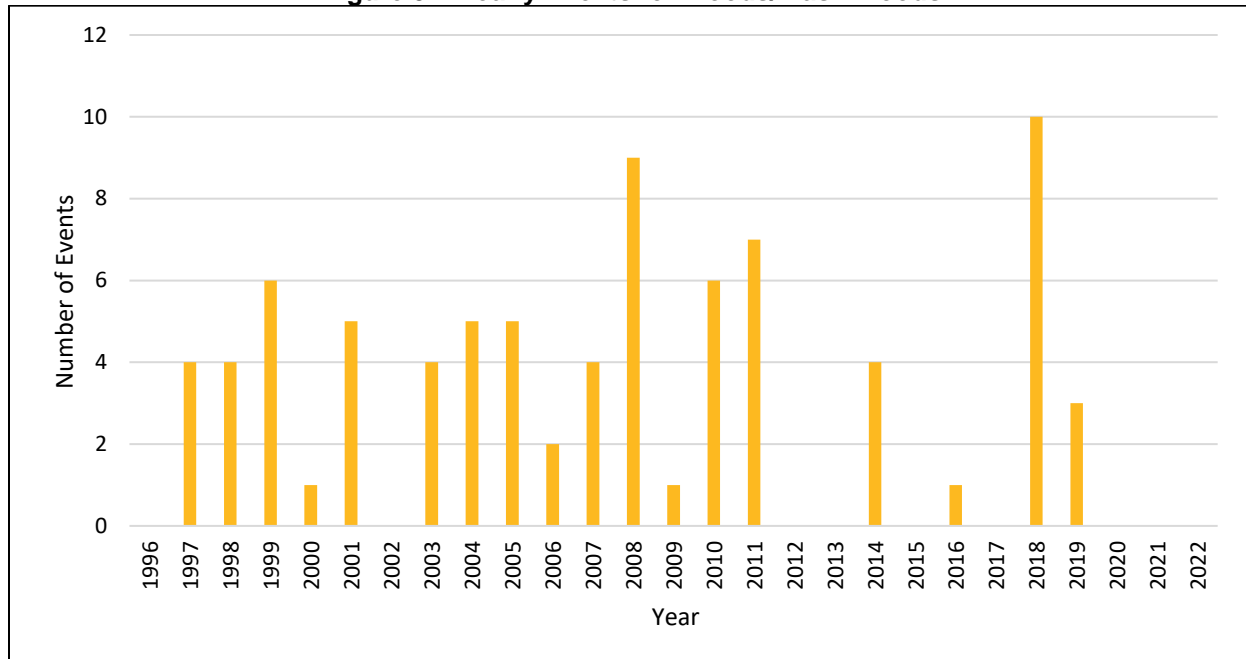
Table 72: Flood Loss Estimate

Hazard Type	Number of Events ¹	Average Events Per Year	Total Property Loss ¹	Average Annual Property Loss ¹	Total Crop Loss ²	Average Annual Crop Loss ²
Flooding	81	2.6	\$4,989,500	\$184,796	\$207,267	\$9,012

Source: 1 Indicates data is from NCEI (1996 to 2022); 2 Indicates data is from USDA RMA (2000 to 2022)

Probability

The NCEI reports 59 flooding and 22 flash flooding events for a total of 81 events from 1996 to 2022. Some years had multiple flooding events. Figure 32 shows the events broken down by year. 18 out of 27 years. Based on the historic record and reported incidents by participating communities, there is a 67% percent probability that flooding will occur annually in the county.

Figure 32: Yearly Events for Floods/Flash Floods

Source: NCEI, 1996-2022

Community Top Hazard Status

The following table lists jurisdictions which identified Flooding as a top hazard of concern:

Jurisdictions	
Kossuth County	Wesley
Algona	Whitemore
Lakota	

Regional Vulnerabilities

Low-income and minority populations are disproportionately vulnerable to flood events.⁹⁹ These groups may lack needed resources to mitigate potential flood events as well as resources that are necessary for evacuation and response. In addition, low-income residents are more likely to live in areas vulnerable to the threat of flooding but lack the resources necessary to purchase flood insurance. The study found that flash floods are more often responsible for injuries and fatalities than prolonged flood events.

Other groups that may be more vulnerable to floods, specifically flash floods, include the elderly, those outdoors during rain events, and those in low-lying areas. Elderly residents may suffer from a decrease or complete lack of mobility and as a result, be caught in flood-prone areas. Residents in campgrounds or public parks may be more vulnerable to flooding events. Many of these areas exist in natural floodplains and can experience rapid rise in water levels resulting in injury or death.

To analyze parcels and populations located in the floodplain, GIS parcel data were acquired from the Kossuth County Assessor. This data was analyzed for the location, number, and value of property improvements at the parcel level. Property improvements include any built structures such as roads, buildings, and paved lots. The data did not contain the number of structures on each parcel. A summary of the results of this analysis for the planning area is provided in the following tables. Specific jurisdictional parcel improvements in the floodplain can be found in the corresponding community profiles in *Section Seven*.

Table 73: Assessed Parcels and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
9,079	\$1,349,180,635	620	\$96,442,510	7%

Source: Kossuth County Assessor, 2023

Table 74: Assessed Parcels and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
9,079	\$1,349,180,635	574	\$98,297,726	6%

Source: Kossuth County Assessor, 2023

In Iowa, Watershed Management Authorities (WMA) are a tool to help cities, counties, Soil and Water Conservation Districts (SWCDs), and stakeholders to work towards watershed planning and management. There is one watershed management authority that covers a portion of Kossuth County: Boone River WMA. WMAs are directed by a board of directors and may perform activities to reduce flood risk.

More information on Watershed Management Authorities can be found at the following link: <https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Watershed-Management-Authorities>.

⁹⁹ Cutter, Susan and Finch, Christina. February 2008. "Temporal and Spatial Changes in Social Vulnerability to Natural Hazards".

The following table is a summary of regional vulnerabilities. For jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 75: Regional Flooding Vulnerabilities

Sector	Vulnerability
People	<ul style="list-style-type: none"> -Low income and minority populations may lack the resources needed for evacuation, response, or to mitigate the potential for flooding -Elderly or residents with decreased mobility may have trouble evacuating -Residents in low-lying areas, especially campgrounds, are vulnerable during flash flood events -Residents living in the floodplain may need to evacuate for extended periods
Economic	<ul style="list-style-type: none"> -Business closures or damages may have significant impacts -Agricultural losses from flooded fields or cattle loss -Closed roads and railways would impact commercial transportation of goods
Built Environment	<ul style="list-style-type: none"> -Buildings may be damaged
Infrastructure	<ul style="list-style-type: none"> -Damages to roadways and railways
Critical Facilities	<ul style="list-style-type: none"> -Wastewater facilities are at risk, particularly those in the floodplain -Critical facilities, especially those in the floodplain, are at risk to damage (critical facilities are noted within individual community profiles)
Climate	<ul style="list-style-type: none"> -Changes in seasonal and annual precipitation normals will likely increase frequency and magnitude of flood events

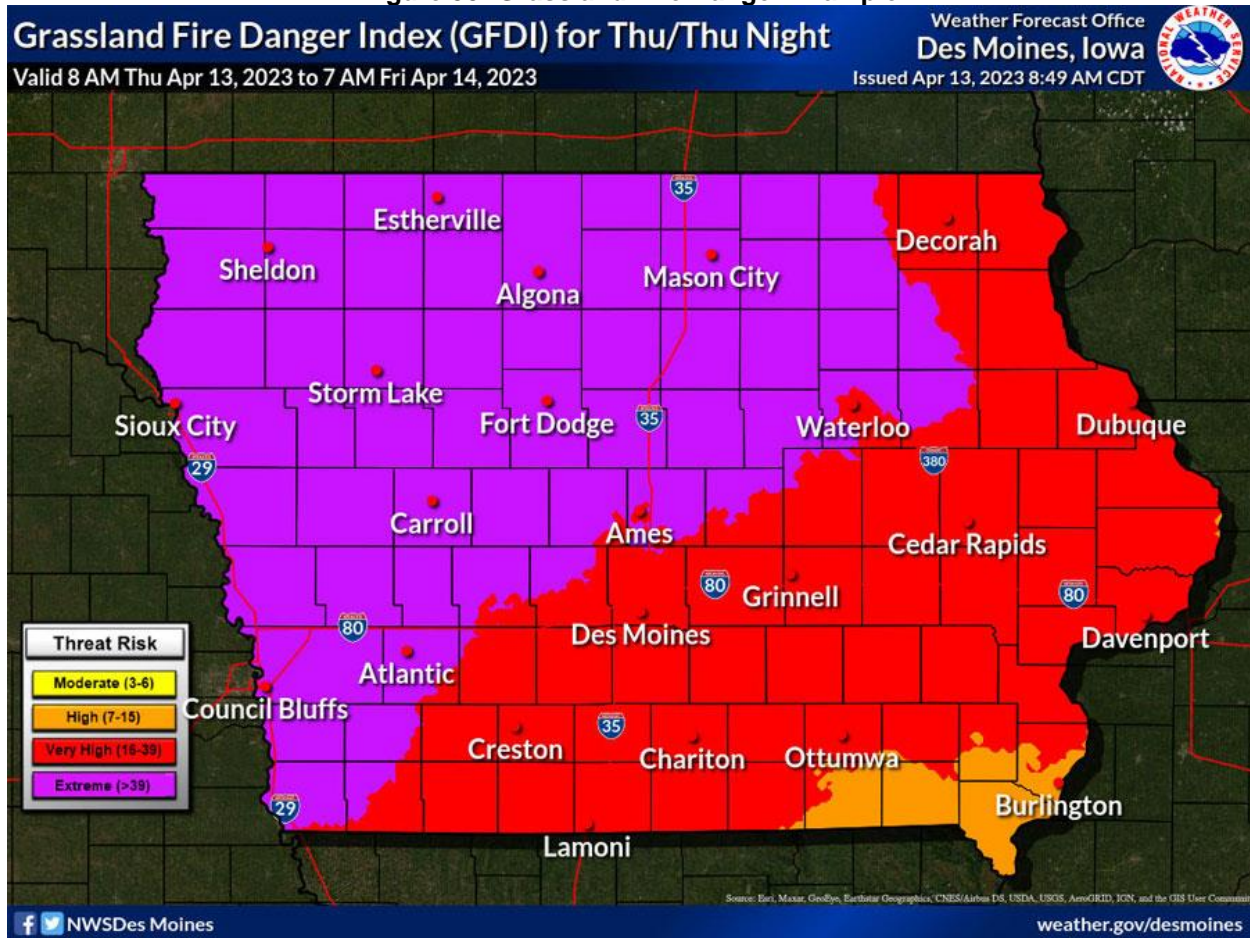
Grass and Wildland Fire

Wildfires, also known as grass fires, brush fires, forest fires, or wildland fires, are uncontrolled fires that occur in the countryside or wildland. Wildland areas may include but are not limited to grasslands, forests, woodlands, agricultural fields, pastures, and other vegetated areas. Wildfires differ from other fires by their potential extensive size, the speed at which they can spread from the original source, their ability to change direction unexpectedly, and to jump gaps (such as roads, rivers, and fire breaks). While some wildfires burn in remote forested and grassland regions, others can cause extensive destruction of homes and other property located in the wildland-urban interface (WUI), the zone of transition between developed areas and undeveloped wilderness.

Lightning starts approximately 10,000 forest fires each year, yet ninety percent of forest fires are started by humans.
~National Park Service

Wildfires are a growing hazard in most regions of the United States, posing a threat to life and property, particularly where native ecosystems meet urban developed areas or where local economies are heavily dependent on open agricultural land. Although fire is a natural and often beneficial process, fire suppression can lead to more severe fires due to the buildup of vegetation, which creates more fuel and increases the intensity and devastation of future fires.

Wildfires are characterized in terms of their geographical characteristics including topography, weather, and fuels; or physical properties such as flame length and propagation. Wildfire behavior is often complex and variably dependent on factors such as fuel type and moisture content, humidity, wind speed, topography, geographic location, and ambient temperature. Fuel is the only one of these factors that humans can control and is the target of most mitigation efforts. The NWS monitors the risk factors including high temperature, high wind speed, fuel moisture (greenness of vegetation), low humidity, and cloud cover in the state on a daily basis (Figure 33). These fire danger predictions are updated regularly and should be reviewed frequently by community leaders and fire department officials.

Figure 33: Grassland Fire Danger Example

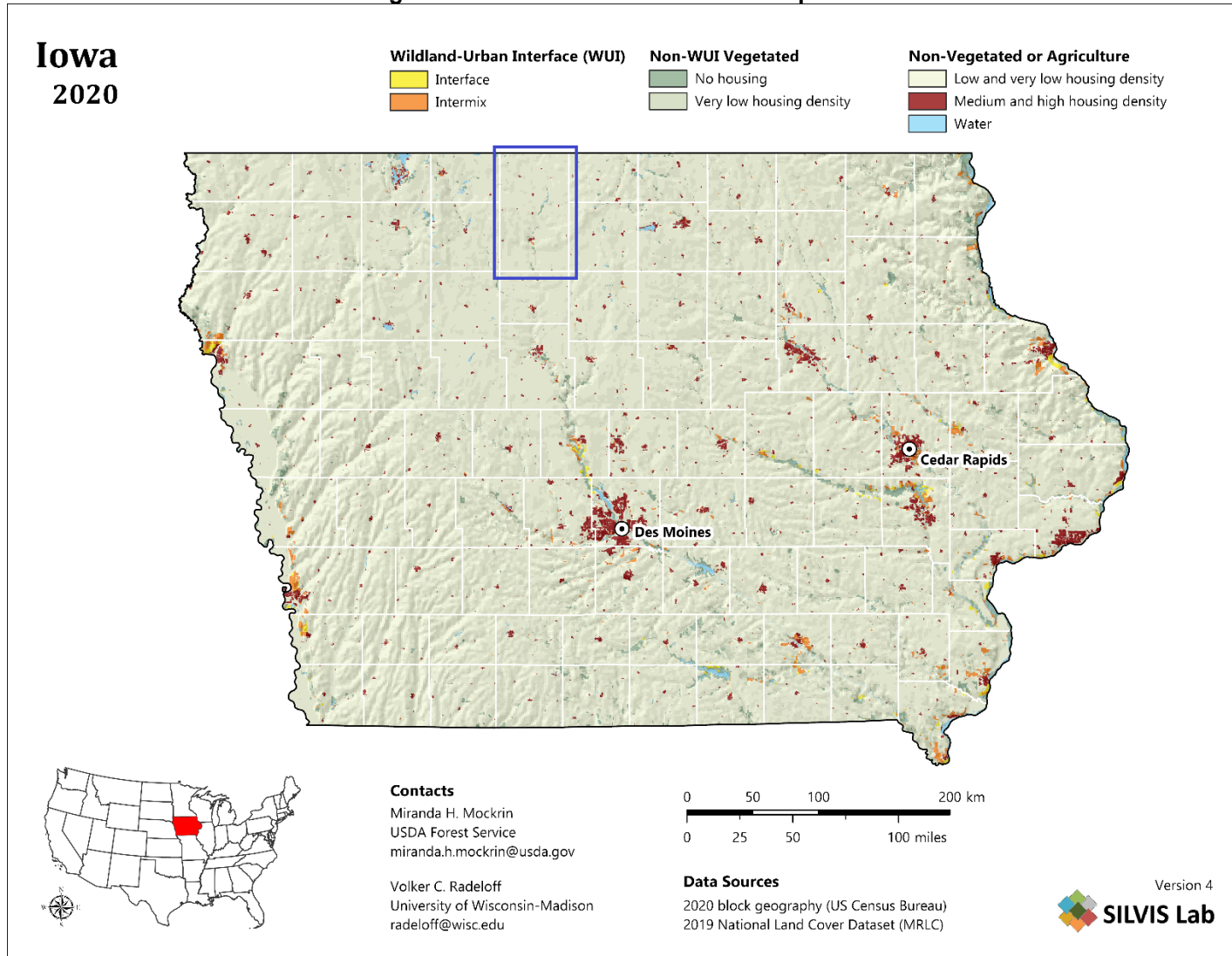
In recent decades, as the population of the United States has decentralized and residents have moved farther away from the center of cities, the WUI has developed significantly, both in terms of population and building stock. The WUI is defined as the zone of transition between developed areas and undeveloped wilderness, where structures and other human development meet wildland. The expansion of the WUI increases the likelihood that wildfires will threaten people and homes, making this area the focus of the majority of wildfire mitigation efforts.

Location

Grass and wildland fires can occur throughout the planning area. The following figure produced by the USDA Forest Service displays the State of Iowa's WUI conditions as of 2020. The approximate location of the planning area is indicated by the black outline. According to this WUI map (Figure 34), intermix areas (orange) are primarily found around Algona. The rest of the planning area is primarily non-WUI vegetated designated areas, with no or low-density housing with a mix of vegetated, non-vegetated, and agricultural land. An interactive version of this map is available online at the following location: <https://silvis.forest.wisc.edu/data/wui-change/>. Figure 35 shows a WUI map for Kossuth County.

¹⁰⁰ National Weather Service. 2023. "Iowa Grassland Fire Danger Index." <https://www.weather.gov/dmx/fire>.

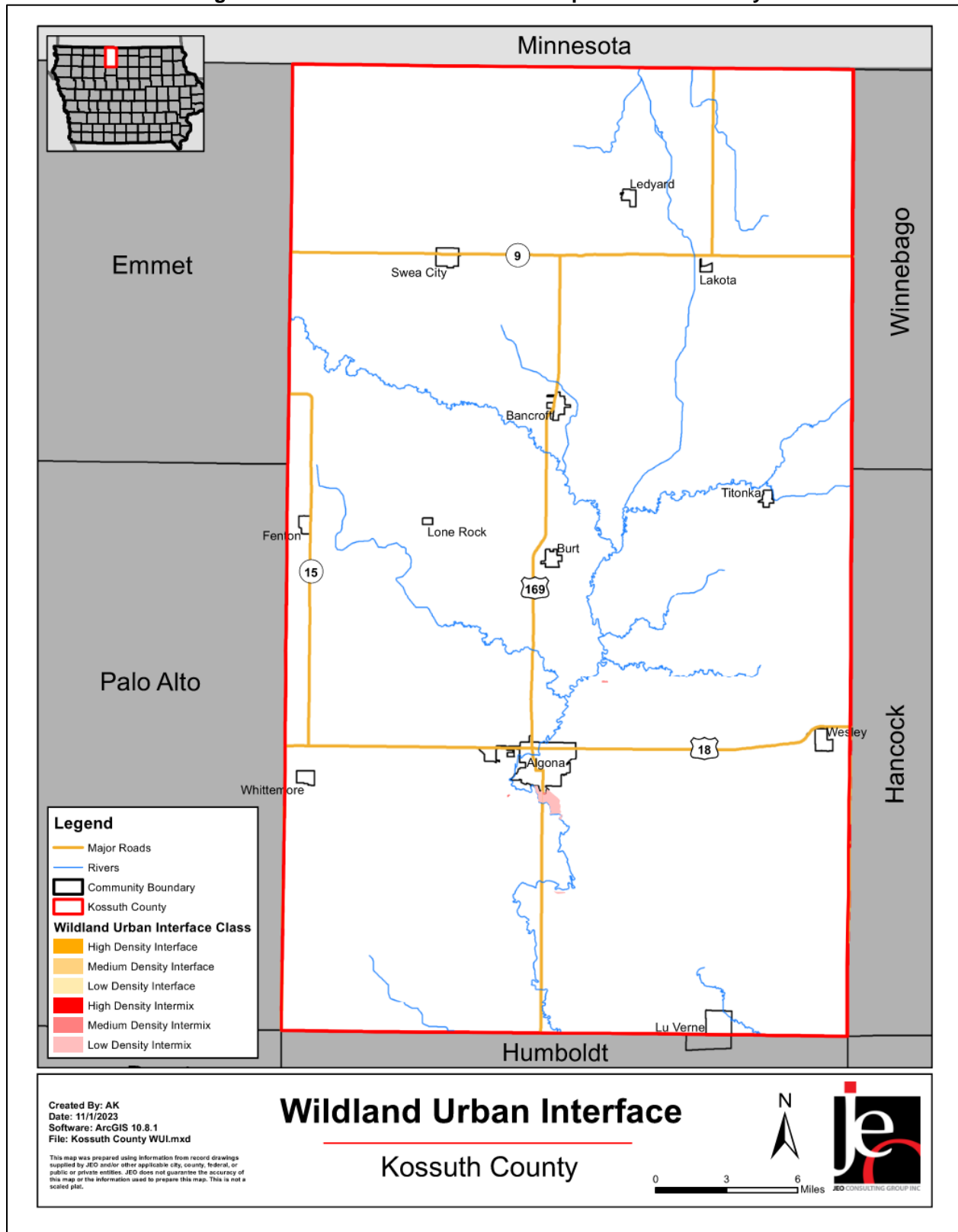
Figure 34: Wildland Urban Interface Map - Iowa



Source: University of Wisconsin-Madison, 2023¹⁰¹

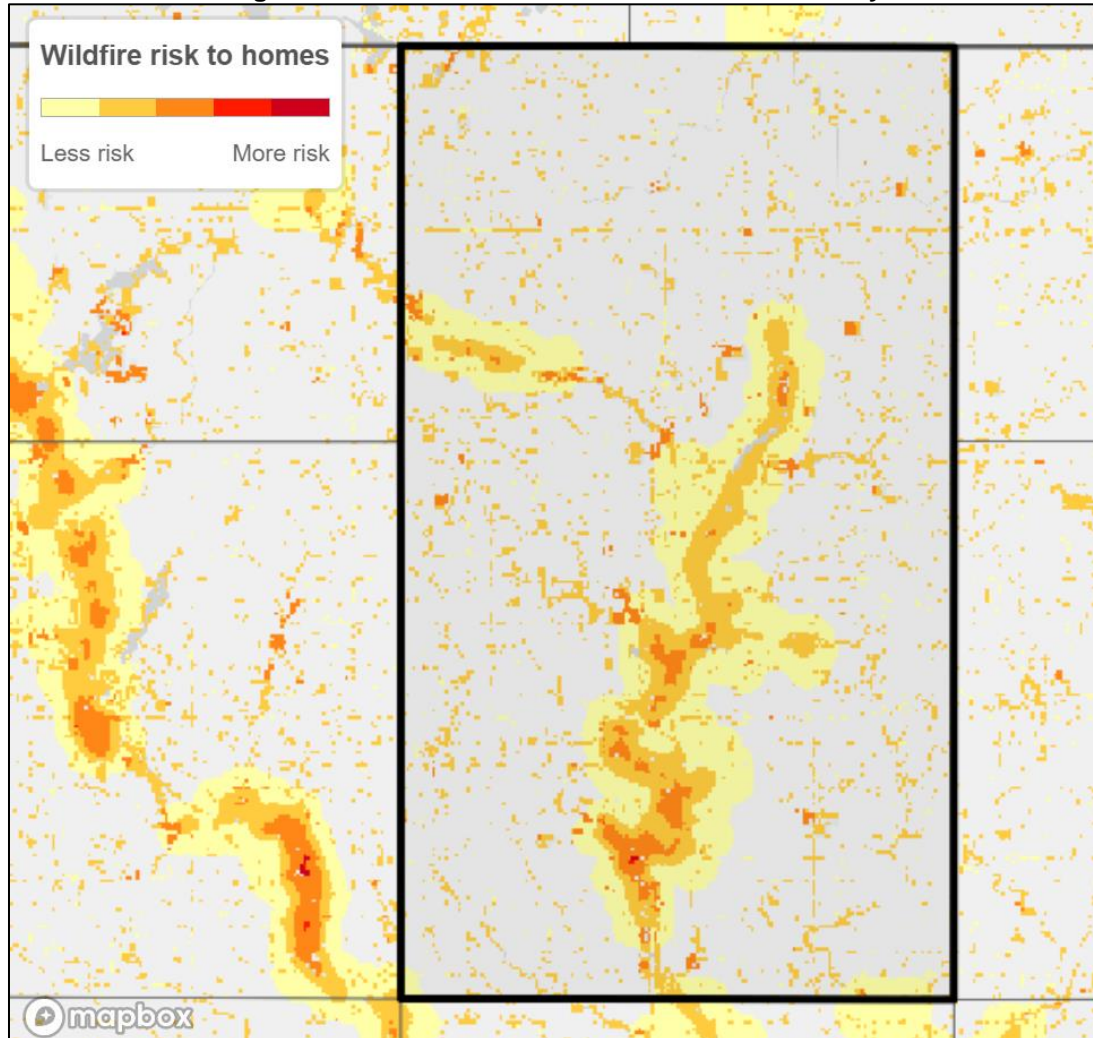
¹⁰¹ USDA Forest Service, University of Wisconsin-Madison: SILVIS Lab. 2023. "Wildland-Urban Interface (WUI) Change 1990-2020." <https://silvis.forest.wisc.edu/data/wui-change/>.

Figure 35: Wildland Urban Interface Map – Kossuth County



The United States Department of Agriculture Forest Service created the interactive web resource, *Wildfire Risk to Communities*, to help communities and jurisdictions understand, explore, and reduce wildfire risk. Figure 36 displays wildfire risk to homes in Kossuth County, as of October 2023.

Figure 36: Wildfire Risk to Homes - Kossuth County



Source: *Wildfire Risk to Communities*¹⁰²

Table 76: Wildfire Vulnerabilities

County	Risk to Homes (compared to Iowa Counties)	Exposure Type*	Wildfire Likelihood (compared to Iowa Counties)
Kossuth	43%	Not Exposed (32%) Directly Exposed (27%) Indirectly Exposed (41%)	39%

Source: *Wildfire Risk to Communities, 2023*¹⁰³

* Exposure is defined as the intersection of wildfire likelihood and intensity with communities.

¹⁰² United States Department of Agriculture, United States Forest Service. 2023. "Wildfire Risk to Communities." Accessed October 2023. <https://wildfirerisk.org/>.

¹⁰³ United States Department of Agriculture, United States Forest Service. 2023. "Wildfire Risk to Communities." <https://wildfirerisk.org/>.

Table 77: Wildfire Vulnerable Populations

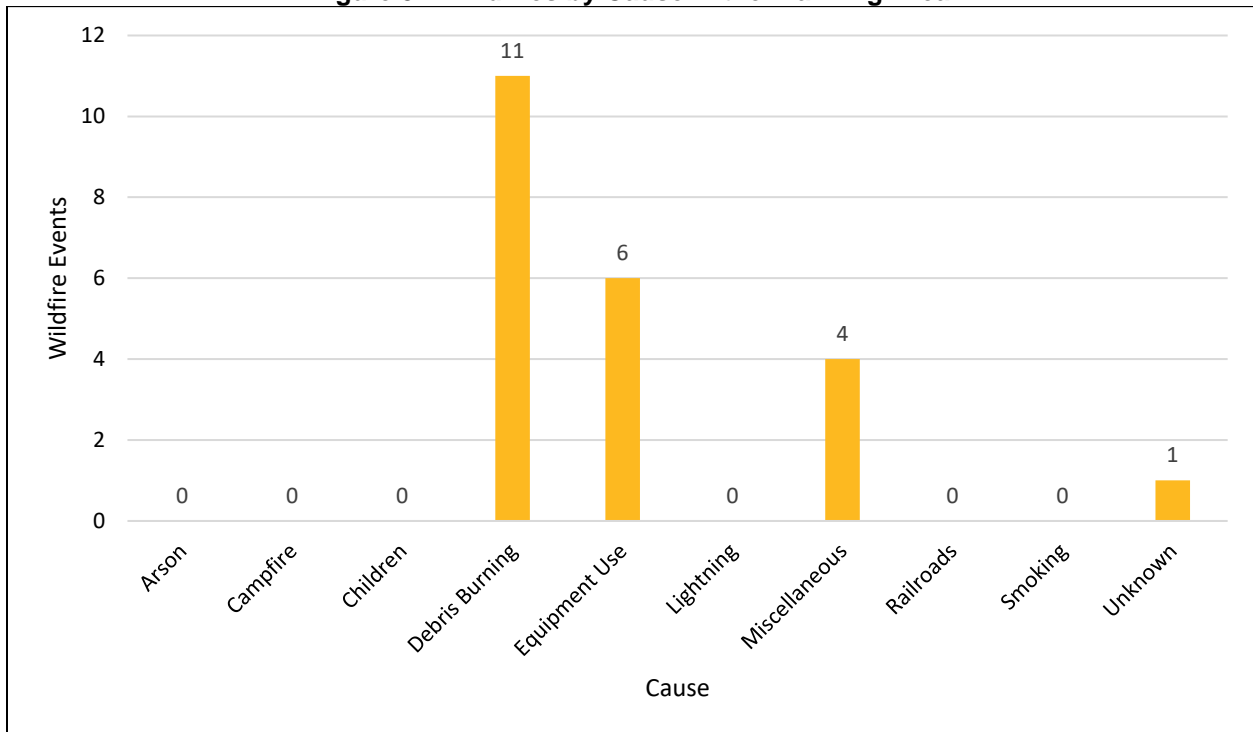
County	Families in Poverty	People with Disabilities	People over 65	Difficulty with English	Households with no Vehicle	Mobile Homes
Kossuth	7.1%	16.9%	23.4%	0.9%	7%	0.3%

Source: *Wildfire Risk to Communities, 2023*¹⁰⁴

Historical Occurrences

According to the Iowa Department of Natural Resources fire supervisor, fire report data in Kossuth County is available from 2008 to 2022. Local fire districts reported a total of 22 wildfires during that time. The most fires occurred in 2011, with 13. The total reported events burned 125 acres.

The majority of wildfires in the planning area are caused by debris burning (50%), with equipment use as the second leading cause (27%) (Figure 37). Wildfires in the planning area have ranged from less than one to 20 acres, with an average event burning 5.7 acres.

Figure 37: Wildfires by Cause in the Planning Area

Source: IDNR Fire Supervisor (personal correspondence), 2008-2022

Average Annual Damages

No damages were reported by NCEI or from IDNR, so it is not possible to calculate the average annual damages for wildfire.

Damages caused by wildfires extend past the loss of building stock, recreation areas, timber, forage, wildlife habitat, and scenic views. Secondary effects of wildfires, including erosion, landslides, introduction of invasive species, and changes in water quality, all increase due to the

¹⁰⁴ United States Department of Agriculture, United States Forest Service. 2023. "Wildfire Risk to Communities." <https://wildfirerisk.org/>.

exposure of bare ground and loss of vegetative cover following a wildfire, and can often be more disastrous than the fire itself in long-term recovery efforts.

Table 78: Wildfire Loss Estimation

Hazard Type	Number of Events	Events Per Year	Total Property Loss ¹	Average Annual Property Loss ¹	Total Crop Loss ²	Average Annual Crop Loss ²
Wildfires	22	1.5	N/A	N/A	N/A	N/A

Source: 1 Indicates data is from NCEI (1996-2022); 2 Indicates data is from USDA RMA (2000-2022)

Extent

For Kossuth County, the following fire departments reported wildfire events: Buffalo Center Fire Department, Fenton Fire Department, Lone Rock Fire and Rescue Department, Swea City Fire Department, and Whittemore Fire Department. Fire departments respond to both wildfires and structural fires in cities.

As the reported wildfires by department indicates, wildfire is a threat throughout the planning area. Lone Rock Fire and Rescue Department has reported the greatest number of fires and the greatest number of acres burned.

Table 79: Reported Wildfires by Fire Department

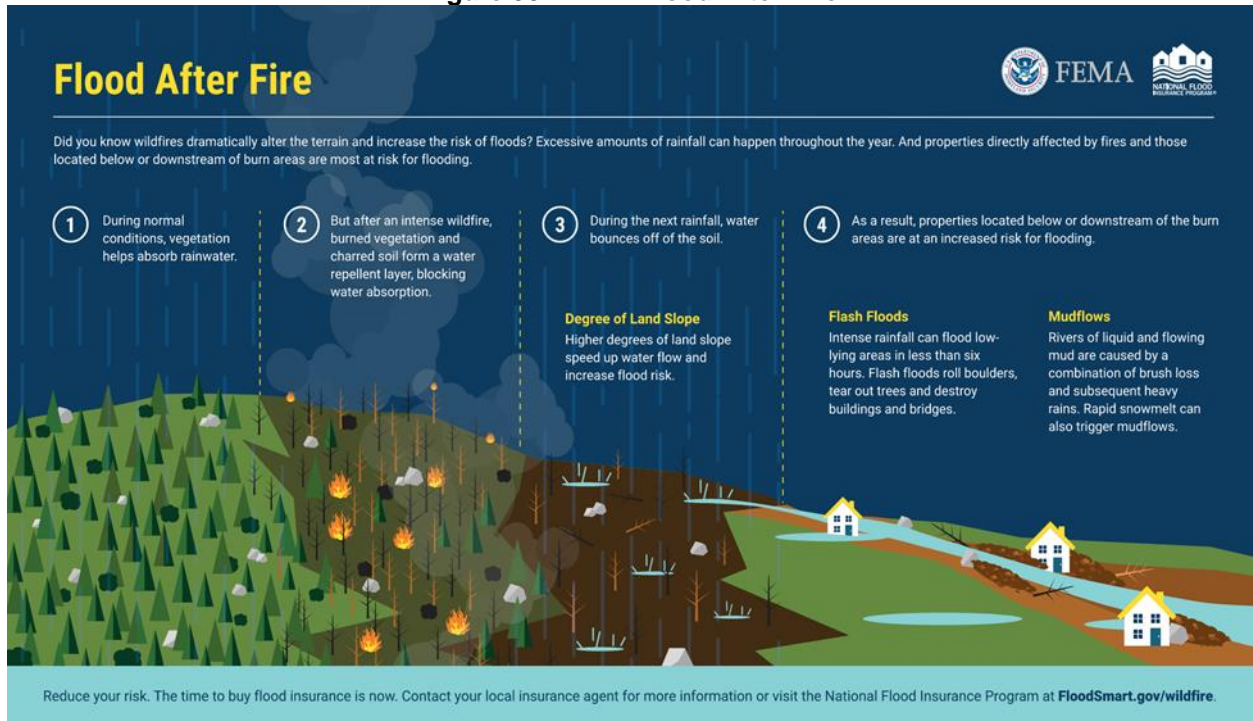
Fire Department	Reported Wildfires	Acres Burned
Buffalo Center Fire Department	2	1
Fenton Fire Department	3	41
Lone Rock Fire Department	9	66
Swea City Fire Department	7	16
Whittemore Fire Department	1	1
Total	22	125

Source: IDNR Fire Supervisor (personal correspondence), 2008-2022

As seen in Table 79 above, wildfires have burned 125 acres of land. In total, there were 22 reported wildfires in the planning area. Of these, three fires burned 15 acres or more, with the two largest wildfires burning 20 acres each in October and November 2011.

Wildfire also contributes to an increased risk from other hazard events, compounding damages and straining resources. FEMA has provided additional information in recent years detailing the relationship between wildfire and flooding (Figure 38). Wildfire events remove vegetation and harden soil, reducing infiltration capabilities during heavy rain events. Subsequent severe storms that bring heavy precipitation can then escalate into flash flooding, dealing additional damage to jurisdictions.

Figure 38: FEMA Flood After Fire

Source: FEMA, 2020¹⁰⁵

Probability

The probability of wildfire occurrence is based on the historic record provided by the Iowa Department of Natural Resources and reported potential by participating jurisdictions. With a grass/wildfire occurring in 5 out of 15 years, there is a 33% annual probability of grass/wildfires occurring in the county each year.

Community Top Hazard Status

The following table lists jurisdictions which identified Grass and Wildland Fire as a top hazard of concern.

Jurisdictions	
Ledyard	Lone Rock

Regional Vulnerabilities

Periods of drought can occur throughout the year while extreme heat conditions during summer months greatly increase the potential for and magnitude of wildland fires. Drought has a high probability of occurring in the planning area and the planning area sees, on average, one day above 100°F each year (Figure 24). During a severe drought, dry conditions, and/or windy conditions, large wildfires can more easily spread.

Wildfire poses a threat to a range of demographic groups. Wildfire, wildfire within the WUI, and urban fire could result in major evacuations of residents in impacted and threatened areas.

¹⁰⁵ FEMA and NFIP. 2023. "Flood After Fire." Accessed October 2023. https://agents.floodsmart.gov/sites/default/files/FEMA-FAF-Infographic-ENG-web_508_01152021.pdf.

Groups and individuals lacking reliable transportation could be trapped in dangerous locations. Lack of transportation is common among the elderly, low-income individuals, and racial minorities, including on tribal reservation lands. Wildfires can cause extensive damage to both urban and rural building stock and properties including critical facilities and infrastructure, as well as agricultural producers which support the local industry and economy. Damaged homes can reduce available housing stock for residents, causing them to leave the area. Additionally, fire events threaten the health and safety of residents and emergency response personnel. Recreation areas, timber and grazing land, wildlife habitat, and scenic views can also be threatened by wildfires.

Development across the planning area may be located within the WUI, particularly in larger municipalities such as the Algona with a larger amount of intermix overlap. Local officials can adopt codes and ordinances that can guide growth in ways to mitigate potential losses from wildfires. These may include more stringent building code standards, setback requirements, or zoning regulations. Other notable vulnerabilities exist for fire departments which service both urban and rural areas as some fire districts lack adequate staff to respond to multi-fire complexes or events in separate areas. The utilization and development of mutual aid agreements or memorandum of understandings are an important tool for districts to share resources and/or coverage.

The following table provides information related to regional vulnerabilities; for jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 80: Regional Wildfire Vulnerabilities

Sector	Vulnerability
People	<ul style="list-style-type: none"> -Risk of injury or death for residents and firefighting personnel -Displacement of people and loss of homes -Lack of transportation poses risk to low-income individuals, families, and elderly -Transportation routes may be blocked by fire, preventing evacuation efforts
Economic	<ul style="list-style-type: none"> -Damages to buildings and property can cause significant losses to business owners -Loss of businesses
Built Environment	<ul style="list-style-type: none"> -Property damages
Infrastructure	<ul style="list-style-type: none"> -Damage to power lines and utility structures -Potential loss of firefighting equipment and resources
Critical Facilities	<ul style="list-style-type: none"> -Risk of damages
Climate	<ul style="list-style-type: none"> -Changes in seasonal temperature and precipitation normals can increase frequency and severity of wildfire events -Changes in climate can help spread invasive species, changing potential fuel loads in wildland areas

Hazardous Materials Release

The following description for hazardous materials is provided by the Federal Emergency Management Agency (FEMA):

Chemicals are found everywhere. They purify drinking water, are used in agriculture and industrial production, fuel our vehicles and machines, and simplify household chores. But chemicals also can be hazardous to humans or the environment if used or released improperly. Hazards can occur during production, storage, transportation, use, or disposal. The community is at risk if a chemical is used unsafely or released in harmful amounts.

Hazardous materials in various forms can cause fatalities, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. Many products containing hazardous chemicals are used and stored in homes routinely. Chemicals posing a health hazard include carcinogens, toxic agents, reproductive toxins, irritants, and many other substances that can harm human organs or vital biological processes.

Chemical manufacturers are one source of hazardous materials, but there are many others, including service stations, hospitals, and hazardous materials waste sites. Varying quantities of hazardous materials are manufactured, used, or stored at an estimated 4.5 million facilities in the United States—from major industrial plants to local dry-cleaning establishments or gardening supply stores.

Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. Hazardous material incidents are technological (meaning non-natural hazards created or influenced by humans) events that involve large-scale releases of chemical, biological or radiological materials. Hazardous materials incidents generally involve releases at fixed-site facilities that manufacture, store, process or otherwise handle hazardous materials or along transportation routes such as major highways, railways, navigable waterways and pipelines.

Fixed sites are those that involve chemical manufacturing sites and stationary storage facilities. The Environmental Protection Agency (EPA) requires the submission of the types and locations of hazardous chemicals being stored at any facility within the state over the previous calendar year. This is completed by submitting a Tier II form to the EPA as a requirement of the Emergency Planning and Community Right-to-Know Act of 1986. Likewise, the U.S. Department of Transportation, through the U.S. Pipeline and Hazardous Materials Safety Administration (PHMSA), has broad jurisdiction to regulate the transportation of hazardous materials, including the discretion to decide which materials shall be classified as hazardous. These materials are placed into one of nine hazard classes based on their chemical and physical properties. The hazard schedules may be further subdivided into divisions based on their characteristics. Because the properties and characteristics of materials are crucial in understanding the dynamics of a spill during a transportation incident, it is important for response personnel to understand the hazard classes and their divisions.

The transportation of hazardous materials is defined by PHMSA as “...a substance that has been determined to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce...” According to PHMSA, hazardous materials traffic in the U.S. now exceeds 1,000,000 shipments per day. Nationally, the U.S. had 108 fatalities associated with the transport of hazardous materials between 2007 through 2016. While such fatalities are a low probability risk, even one event can harm many people.

Table 81 demonstrates the nine classes of hazardous material according to the 2020 Emergency Response Guidebook.

Table 81: Hazardous Material Classes

Class	Type of Material	Divisions
1	Explosives	Division 1.1 – Explosives which have a mass explosion hazard Division 1.2 – Explosives which have a projection hazard but not a mass explosion hazard Division 1.3 – Explosives which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard Division 1.4 – Explosives which present no significant hazard Division 1.5 – Very insensitive explosives with a mass explosion hazard Division 1.6 – Extremely insensitive articles which do not have a mass explosion hazard
2	Gases	Division 2.1 – Flammable gases Division 2.2 – Non-flammable, non-toxic gases Division 2.3 – Toxic gases
3	Flammable liquids (and Combustible liquids)	
4	Flammable solids; Substances liable to spontaneous combustion; Substances which, on contact with water, emit flammable gases	Division 4.1 – Flammable solids, self-reactive substances and solid desensitized explosives Division 4.2 – Substances liable to spontaneous combustion Division 4.3 – Substances which in contact with water emit flammable gases
5	Oxidizing substances and Organic peroxides	Division 5.1 – Oxidizing substances Division 5.2 – Organic peroxides
6	Toxic Substances and infectious substances	Division 6.1 – Toxic substances Division 6.2 – Infectious substances
7	Radioactive materials	-
8	Corrosive substances	-
9	Miscellaneous hazardous materials/dangerous goods and articles	-

Source: Emergency Response Guidebook, 2020¹⁰⁶

¹⁰⁶ U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration. 2022. “2020 Emergency Response Guidebook.” <https://www.phmsa.dot.gov/hazmat/erg/emergency-response-guidebook-erg>.

Location

Iowa has approximately 4,602 facilities across the state that house hazardous materials according to the Tier II reports submitted to the Iowa Department of Natural Resources. Of those, 60 locations are located in the planning area. These locations are shown in the following figure. A listing of hazardous material storage sites can be found in *Section Seven: Community Profiles* for each jurisdiction.

Hazardous material releases during transportation primarily occur on major transportation routes as identified in (Figure 40). Railroads providing service through the planning area have developed plans to respond to chemical releases along rail routes. A large number of spills also typically occur during the loading and unloading of chemicals for highway and pipeline chemical transport. Transportation corridors in the planning area are primarily US Routes and State Routes.

According to PHMSA, there are several gas transmission and hazardous liquid pipelines located in the planning area. A map of the pipelines from PHMSA for Kossuth County can be seen below (Figure 41).¹⁰⁷ According to the U.S. Energy Information Administration (EIA) there are multiple natural gas pipelines, and no crude oil or petroleum product pipelines that run through the county.¹⁰⁸

¹⁰⁷ Pipeline and Hazardous Materials Safety Administration. 2023. "National Pipeline Mapping System." <https://www.npms.phmsa.dot.gov/>.

¹⁰⁸ U.S. Energy Information Administration. 2023. "Maps – Crude Oil Pipelines, Natural Gas Interstate and Intrastate Pipelines, Petroleum Products Pipelines." https://www.eia.gov/maps/layer_info-m.php

Figure 39: Fixed Chemical Sites in the County

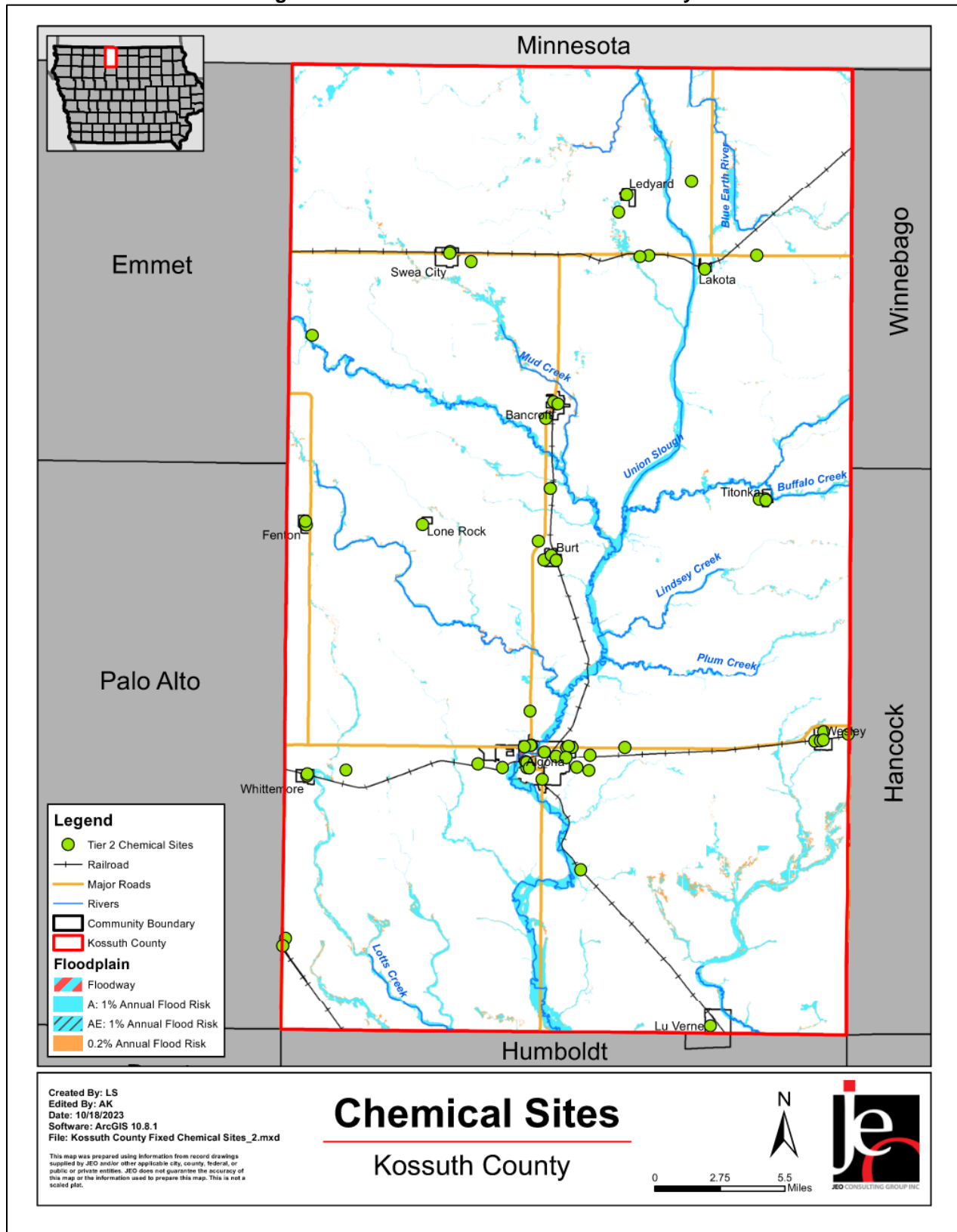


Figure 40: Major Transportation Routes with Half Mile Buffer

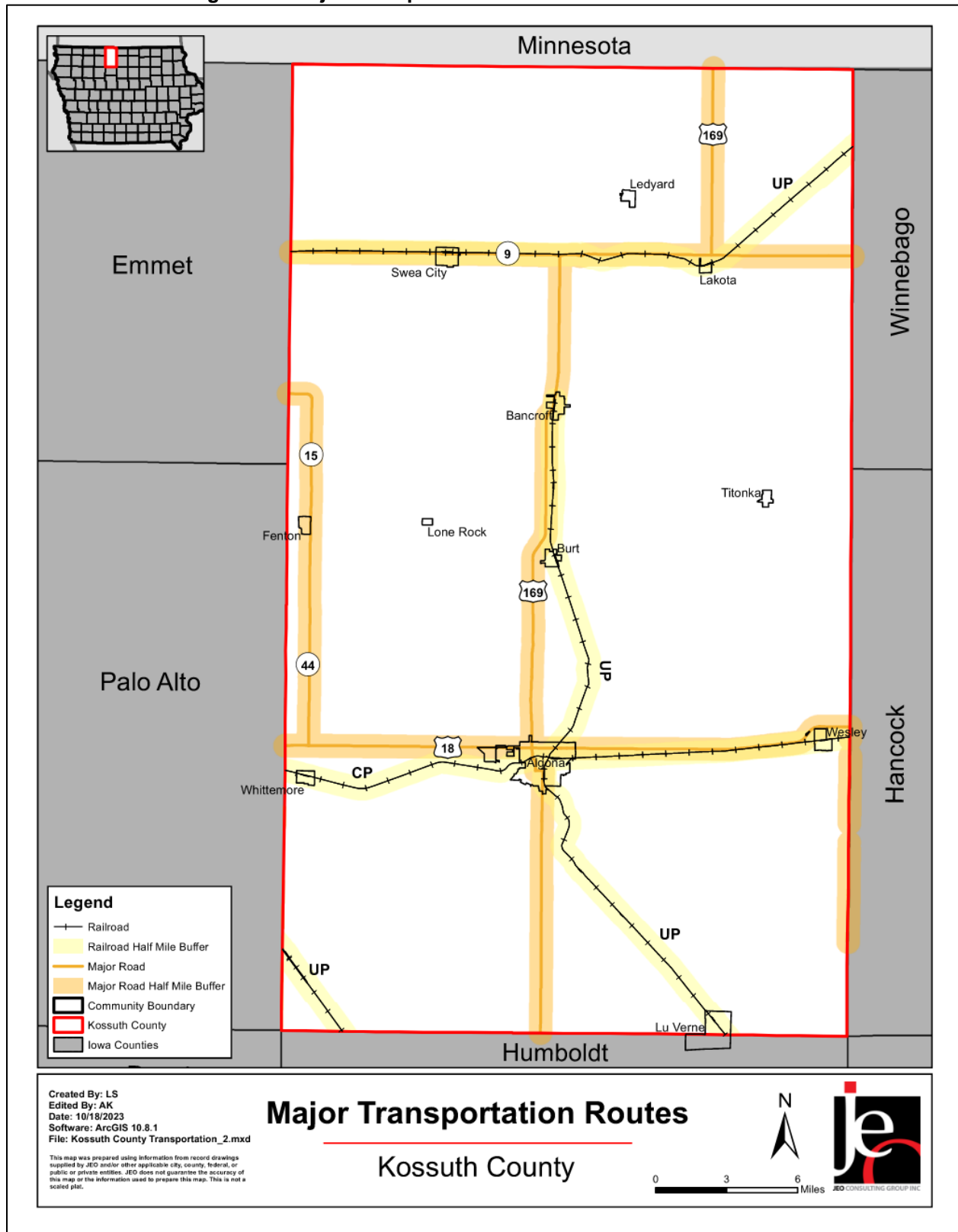
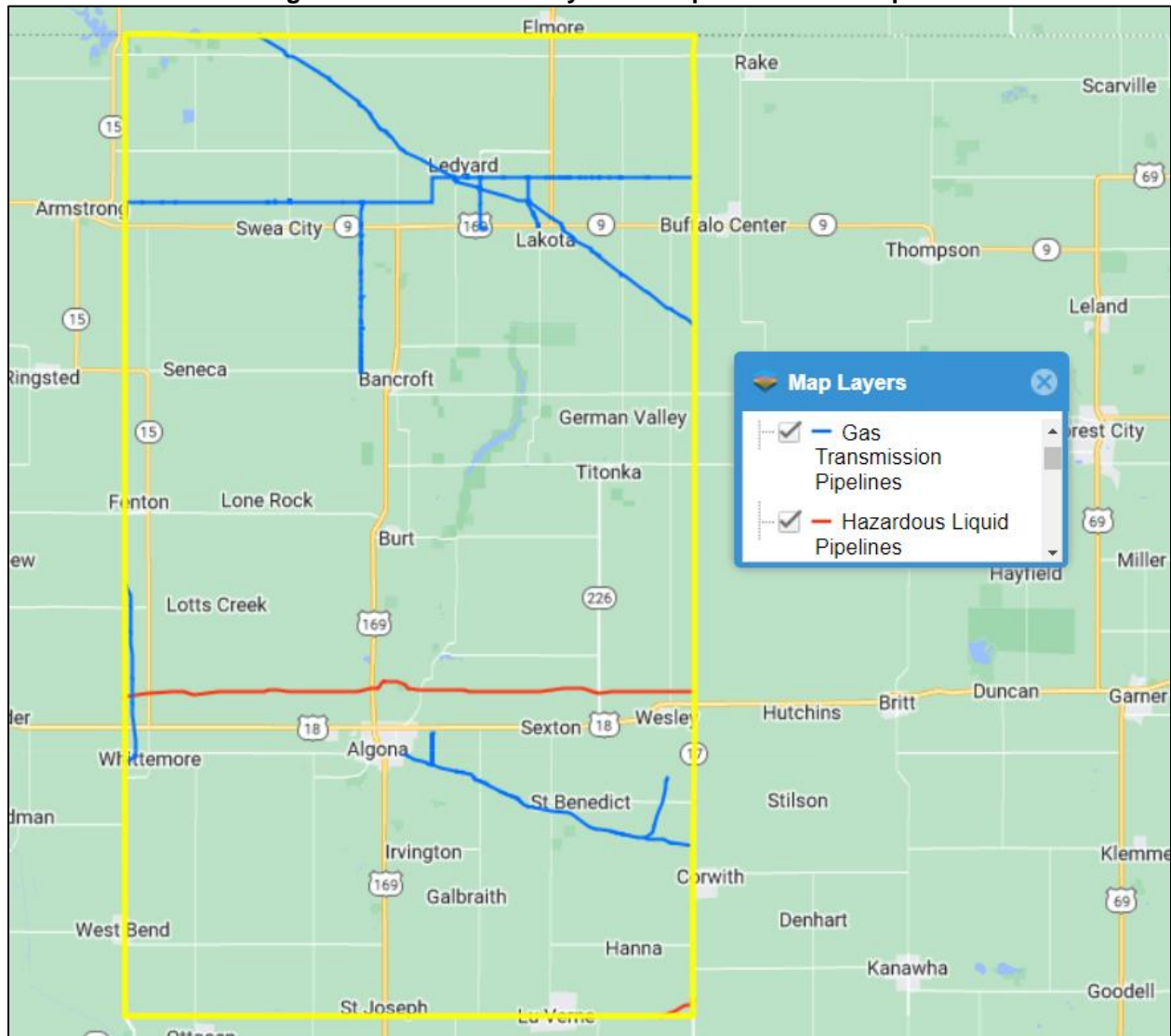


Figure 41: Kossuth County Public Pipeline Viewer Map



Source: National Pipeline Mapping System¹⁰⁹

¹⁰⁹ National Pipeline Mapping System. 2023. "Public Viewer." Accessed April 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

Iowa has established a Weapons of Mass Destruction (WMD)/HazMat team to provide statewide coverage for identifying, assessment and support of render-safe procedures involving explosive devices and those that may contain chemical, biological, radioactive, nuclear, or explosive (CBRNE) materials. The team is made up of personnel from Council Bluffs, Davenport, and Des Moines and helps enhance the capabilities of existing fire department hazmat teams across the state.¹¹⁰

Extent

The extent of chemical spills at fixed sites varies and depends on the type of chemical that is released with a majority of events localized to the facility. The probable extent of chemical spills during transportation is difficult to anticipate and depends on the type and quantity of chemical released. In total seven fixed site releases have occurred in the planning area, and the total amount spilled ranged from one to ten gallons and eight to fifty pounds. Of the seven chemical spills, one spill led to an evacuation of ten employees when an unknown amount of anhydrous ammonia was released. No spills resulted in injury or death.

In total, seven releases have occurred during transportation in the planning area. Transportation spills ranged from 20 liquid gallons of material released to 700 liquid gallons released, with an average quantity spilled of 305 liquid gallons. None of the seven chemical spills led to an evacuation, injury, or death. Based on historical records, it is likely that any spill involving hazardous materials will not affect an area larger than a quarter mile from the spill location.

Historical Occurrences

Fixed Site Spills

According to the U.S. Coast Guard's National Response Center database (NRC), there have been seven fixed site chemical spills from 1990 to 2022 in the planning area. There were no property damages reported for these chemical spills. The following table displays the larger spills that have occurred throughout the planning area.

Table 82: Large Fixed Site Chemical Spills

Date	Location of Release	Quantity Spilled	Material Involved	Number of Injuries	Property Damage
2010	Lakota	8.24 lbs.	Acrolein	0	\$0
2011	Algona	50 lbs.	Anhydrous Ammonia	0	\$0

Source: National Response Center, 1990- 2022

Transportation Spills

According to PHMSA, seven hazardous materials releases occurred during transportation in the planning area between 1971 and April 2023. During these events, there were no evacuations, fatalities, or injuries. Damages totaled \$421,171. The following table provides a list of the larger historical transportation chemical spills (>500 gallons).

¹¹⁰ HSEMD. 2020. "Iowa's Emergency Response Teams." <https://homelandsecurity.iowa.gov/programs/special-teams/>.

Table 83: Large Chemical Transportation Spills

Date of Event	Location of Release	Failure Description	Material Involved	Transportation Mode	Injuries or Fatalities	Total Damage
5/19/1994	Bancroft	Vehicle Accident	525 LGA Anhydrous Ammonia	Highway	None	\$16,000
5/19/2000	Titonka	Vehicle Accident	700 LGA Diesel Fuel	Highway	None	\$50,700

Source: PHMSA, 1971 - April 2023

Average Annual Damages

There have been seven fixed site spills in the planning area reported from the NRC and seven transportation spills as reported by PHMSA. Neither the NRC nor PHMSA track crop losses from chemical spills. These events reported \$421,171 property damages. This does not include losses from displacement, functional downtime, economic loss, injury, or loss of life.

Table 84: Hazardous Materials Release Loss Estimate

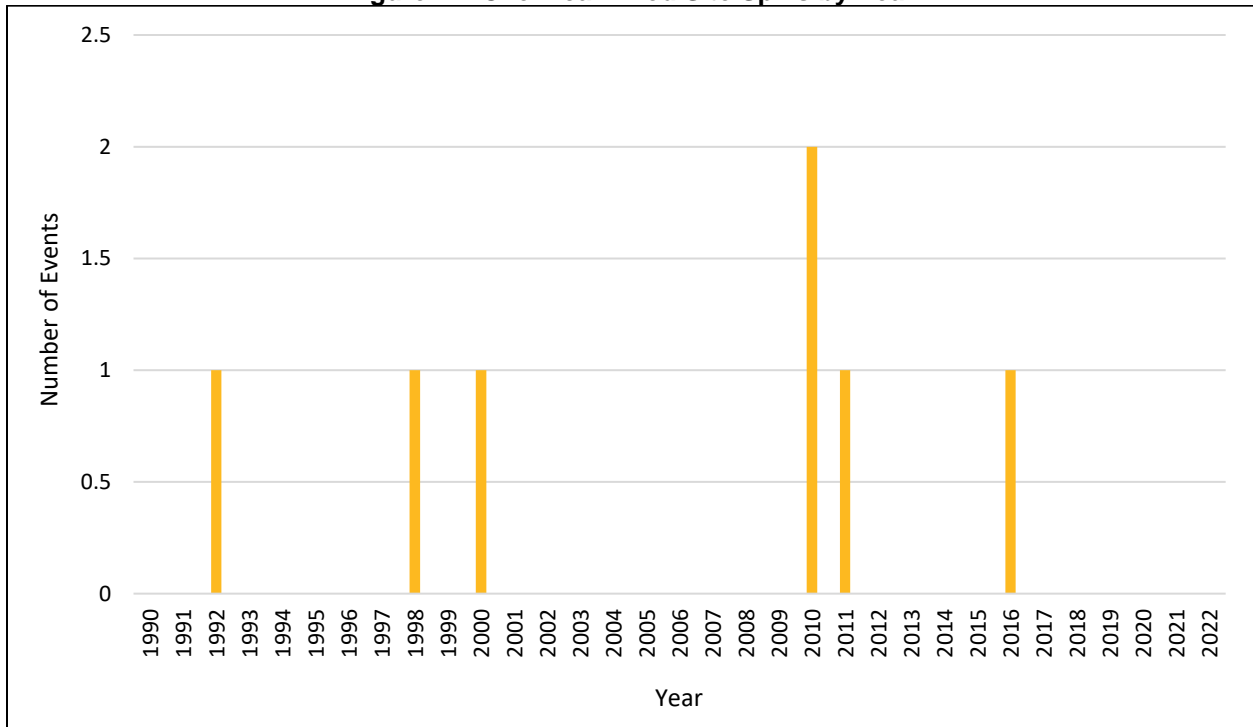
Hazard Type	Number of Events	Events Per Year	Injuries	Total Evacuated	Total Damages	Average Annual Loss
Hazardous Materials Release (Fixed Site)	7	0.21	0	1	\$0	\$0
Hazardous Materials Release (Transportation)	7	0.13	0	0	\$421,171	\$7,947

Source: National Response Center, 1990 - 2022; PHMSA, 1971 - April 2023

Probability

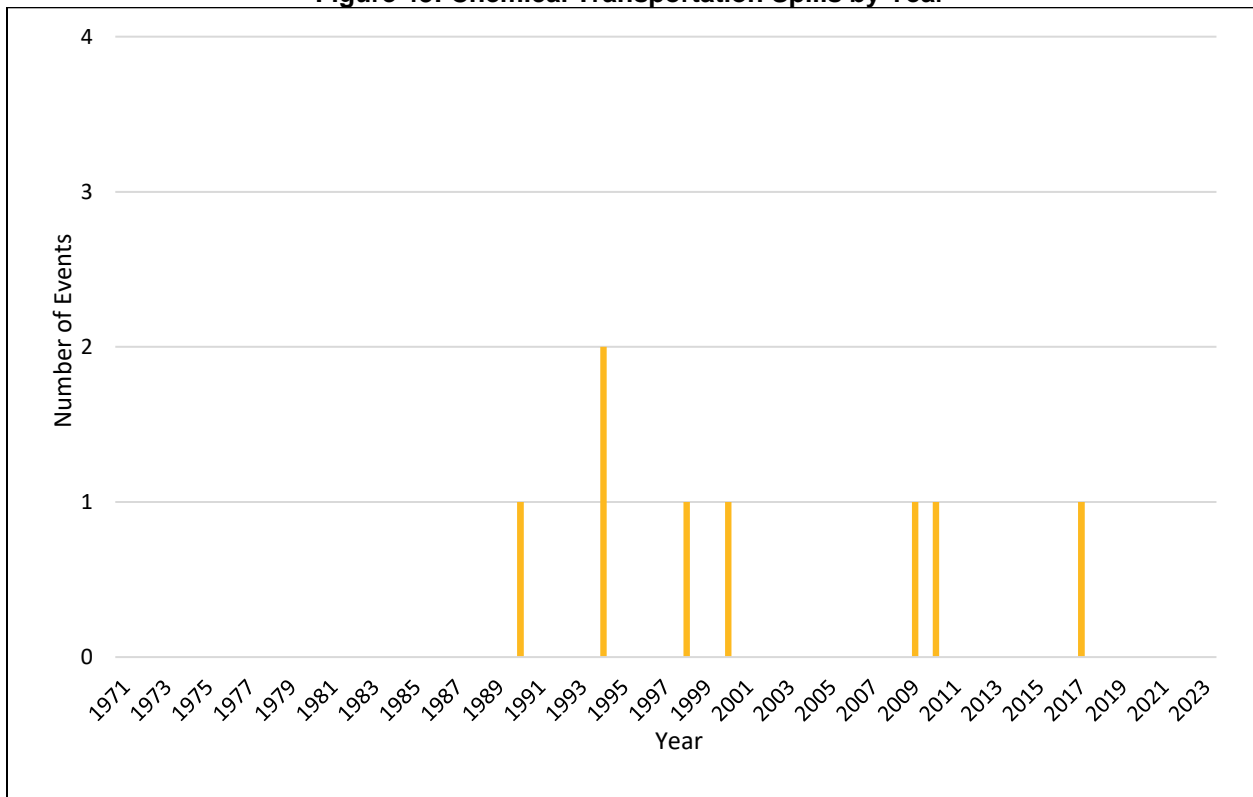
Given the historic record of occurrence for fixed chemical spill events (at least one chemical spill reported in 6 of 33 years), for the purposes of this plan, the annual probability of a fixed chemical spill is 18%. Given the historic record of occurrence for chemical transportation spill events (7 out of 53 years with a reported event), for the purposes of this plan, the annual probability of chemical transportation occurrence is 13%.

Figure 42: Chemical Fixed Site Spills by Year



Source: National Response Center, 1990-2022

Figure 43: Chemical Transportation Spills by Year



Source: PHMSA, 1971 - April 2023

Community Top Hazard Status

The following table lists jurisdictions which identified Hazardous Materials Release as a top hazard of concern:

Jurisdictions	
Kossuth County	Swea City
Lakota	

Regional Vulnerabilities

To reduce the risk to people and property damage, future development should encourage chemical storage and manufacturing facilities to be built away from critical facilities such as hospitals, schools, daycares, nursing homes, and other residential areas. Likewise, development and critical facilities should be built away from major transportation corridors used for chemical transportation. Specific vulnerabilities exist for critical facilities or vulnerable population centers (schools, daycares, hospital, etc.) which are most heavily populated during the daytime as most chemical transportation incidents occur during the weekday daytime hours.

The following table summarizes regional vulnerabilities; for jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 85: Regional Hazardous Materials Release Vulnerabilities

Sector	Vulnerability
People	-Those in close proximity could have minor to severe health impacts -Possible evacuation -Hospitals, nursing homes, and the elderly at greater risk due to low mobility
Economic	-A chemical plant shutdown in smaller communities would have significant impacts on the local economy -Evacuations and closed transportation routes could impact businesses near spill
Built Environment	-Risk of fire or explosion
Infrastructure	-Transportation routes can be closed during evacuations or cleanup
Critical Facilities	-Risk of fire, explosion, or other damages -Risk of evacuation
Climate	-More extreme weather events and flood events put sites at risk of flooding at greater risk

Human Infectious Diseases

According to the Cleveland Clinic, Infectious Diseases are:

“illnesses caused by harmful agents (pathogens) that get into your body. The most common causes are viruses, bacteria, fungi and parasites. Infectious diseases usually spread from person to person, through contaminated food or water and through bug bites.”¹¹¹

In some situations, Human Infectious Diseases can lead to the declaration of a public health emergency. The number of cases that qualifies as a public health emergency depends on several factors including the illness, its symptoms, ease in transmission, incubation period, and available treatments or vaccinations. With the advent of sanitation sewer systems and other improvements in hygiene since the 19th century, the spread of infectious disease has greatly diminished. Additionally, the discovery of antibiotics and the implementation of universal childhood vaccination programs have played a major role in reducing human disease impacts.

Today, human disease incidences are carefully tracked by the Centers for Disease Control and Prevention (CDC) and state organizations for possible epidemics and to implement control systems. Novel illnesses or diseases have the potential to develop annually and significantly impact residents and public health systems.

Some of the best actions or treatments for outbreaks are nonpharmaceutical interventions (NPI). These are readily available behaviors or actions, and response measures people and communities can take to help slow the spread of respiratory viruses such as influenza. Understanding NPIs and increasing the capacity to implement them in a timely way can improve overall community resilience during an outbreak. Using multiple NPIs simultaneously can reduce influenza transmission in communities even before vaccination is available.¹¹²

Pandemics are global or national disease outbreaks. These types of illnesses, such as influenza, can easily spread person-to-person, cause severe illness, and are difficult to contain. An especially severe pandemic can lead to high levels of illness, death, social disruption, and economic turmoil. Past pandemic events include:

- 1918 Spanish Flu: the H1N1 influenza virus spread world-wide during 1918 and 1919. It is estimated that at least 50 million people worldwide died during this pandemic with about 675,000 deaths alone in the United States. No vaccine was ever developed, and control efforts included self-isolation, quarantine, increased personal hygiene, disinfectant use, and social distancing.
- 1957 H2N2 Virus: a new influenza A virus emerged in Eastern Asia and eventually crossed into coastal U.S. cities in summer of 1957. In total 1.1 million people worldwide died of the flu with 116,000 of those in the United States.

¹¹¹ Cleveland Clinic. 2022. Accessed October 2023. “Infectious Diseases.” <https://my.clevelandclinic.org/health/diseases/17724-infectious-diseases>.

¹¹² U.S. Department of Health and Human Services. 2017. “Pandemic Influenza Plan: 2017 Update.” <https://www.cdc.gov/flu/pandemic-resources/pdf/pan-flu-report-2017v2.pdf>.

- 1968 H3N2 Virus: an influenza A virus discovered in the United States in September 1968 which killed over 100,000 citizens. The majority of deaths occurred in people 65 years and older.
- 2009 H1N1 Swine Flu: a novel influenza A virus discovered in the United States and spread quickly across the globe. This flu was particularly prevalent in young people while those over 65 had some antibody resistance. The CDC estimated the U.S. had over 60.8 million cases and 12,469 deaths.
- 2019 COVID-19: the novel influenza A virus which originated in Wuhan China and spread globally. As of November 8, 2022, the CDC reported 97.6 million cases and 1.1 million deaths attributed to COVID-19 in the United States. Efforts to control and limit the virus included self-isolation, quarantine, increased cleaning measures, social distancing, and vaccinations. Significant impacts to the national and global economy have been caused by COVID-19.

The Iowa Department of Public Health requires doctors, hospitals, and laboratories to report on many communicable diseases and conditions to monitor disease rates for epidemic events. Additionally, regional or county health departments monitor local disease outbreaks and collect data relevant to public health. Kossuth Regional Health serves all of Kossuth County.

Location

Human disease outbreaks can occur anywhere in the planning area. Public health emergencies or pandemic threshold levels are dependent on the outbreak type, transmission vectors, location, and season. Normal infectious disease patterns are changing due to increasing human mobility and climate change. Rural populations are particularly at risk for animal-related diseases while urban areas are at greater risk from community spread type illnesses. All residents throughout the planning area are at risk during public health emergencies. All areas within the planning area experienced impacts from COVID-19 specifically during 2020.

Historical Occurrences

Cases and fatalities associated with Human Infectious Diseases vary between illness types and severity of outbreak. Past major outbreaks in Iowa have specifically included the H1N1 Swine Flu in 2009 and COVID-19 in 2020.

- H1N1 Swine Flu (2009) – outbreaks were first reported in mid-April 2009 and spread rapidly. The new flu strand for which immunity was nonexistent in persons under 60 years old was similar in many ways to typical seasonal influenza. Symptoms of H1N1 included fever greater than 100°F, cough, and sore throat. County specific counts of H1N1 are not available, however a total of 92 confirmed cases were reported for Iowa by June 12, 2009.¹¹³ Outbreaks in Iowa were typically seen sporadically. The U.S. Public Health Emergency for the H1N1 Influenza outbreak expired on June 23, 2010. The CDC developed and encouraged all US residents to receive a yearly flu vaccination to protect against potential exposures. The H1N1 continues to appear annually and persons in the planning area are at risk of infection in the future.

¹¹³ Centers for Disease Control and Prevention. June 2009. "Novel H1N1 Flu Situation Update."
<https://www.cdc.gov/h1n1flu/updates/061209.htm>.

- COVID-19 (2020) – In January 2020, the CDC confirmed the first case of COVID-19 in the United States, and it quickly spread across the country. By March 2020, the World Health Organization declared COVID-19 a pandemic and travel bans were instituted around the globe. Primary symptoms of the infection included cough, fever or chills, shortness of breath or difficulty breathing, fatigue, muscle and body aches, headache, loss of taste or smell, sore throat, and others. The first confirmed cases of COVID-19 in the State of Iowa were three residents in Johnson County. Governor Kim Reynolds issued a Public Health Disaster Emergency Proclamation on March 17, 2020, which lasted until February 14, 2022.

The table below displays COVID-19 confirmed cases and deaths as of March 23, 2023.

Table 86: COVID-19 Cases in Kossuth County

Population (2020)	Confirmed Cases	Fatalities
14,828	4,384	101

Source: *The New York Times*¹¹⁴

Extent

Those most affected by human infectious disease outbreaks are typically the very young, the very old, the immune-compromised, the economically vulnerable, and the unvaccinated. Roughly 24% of the planning area's population is 19 years or younger, and 32% of the planning area is 65 years or older. These factors increase vulnerability to the impacts of outbreaks. Refer to *Section Three: County Profile* for further discussion of age and economic vulnerability in the planning area. It is not possible to determine the extent of individual public health emergency events, as the type and severity of a novel outbreak cannot be predicted. However, depending on the disease type, a significant portion of residents may be at risk to illness or death.

The extent of human infectious diseases is closely tied to the proximity or availability of health centers and services. There is one hospital in the county and several nursing facilities and health clinics.

Immunodeficiency disorders (such as diabetes), obesity, or other pre-existing health complications reduce the ability of the body to fight infection. Diabetes prevalence in Kossuth County and for the state are listed in the table below.

Table 87: Diabetes Prevalence in the Planning Area

Geography	Diagnosed Diabetes Rate
Kossuth County	9.7% (Total Adults Age 20+)
State of Iowa	8.6% (Total Adults Age 18+)

Source: *Centers of Disease Control and Prevention, 2023*¹¹⁵

*County data is from 2020; State data is from 2021

Iowa Code, Chapter 139a.8(6) and Iowa Administrative Code, 641-7.7(139) outline the immunization requirement for students attending licensed childcare centers and elementary or secondary schools. Requirements are for the following vaccinations: Pneumococcal, diphtheria,

¹¹⁴ The New York Times. 2023. Accessed August 4, 2023. "Track Covid-19 in Kossuth County, Iowa". <https://www.nytimes.com/interactive/2023/us/kossuth-iowa-covid-cases.html>.

¹¹⁵ Centers for Disease Control and Prevention. 2023. "Diagnosed diabetes prevalence – Iowa." <https://gis.cdc.gov/grasp/diabetes/diabetesatlas-surveillance.html#>.

pertussis, tetanus, polio, measles, rubella, Hepatitis B, meningococcal, and varicella (chicken pox). The Vaccines for Children program is a federally funded and state-operated vaccine supply program that provides free vaccines to children under 18 who are of American Indian or Alaska Native descent, enrolled in Medicaid, uninsured, or underinsured. Additionally, the HPV vaccination series is recommended for teenagers and influenza vaccinations are recommended yearly for those over six months old. Individuals without vaccinations are at greater risk of contracting diseases or carrying diseases to others.

Average Annual Losses

The national economic burden of influenza medical costs, medical costs plus lost earnings, and total economic burden was \$10.4 billion, \$26.8 billion, and \$87.1 billion respectively in 2007.¹¹⁶ However, associated costs with pandemic response are much greater. Current estimated costs for COVID-19 in the United States exceed \$16 trillion. Specific costs do not include losses from displacement, functional downtime, economic loss, injury, or loss of life. The direct and indirect effects of significant health impacts are difficult to quantify.

Probability

There is no pattern as to when public health emergencies will occur. Based on historical records, it is likely that small-scale disease outbreaks will occur annually within the county. However, large scale emergency events (such as COVID-19) cannot be predicted.

Community Top Hazard Status

The following table lists jurisdictions which identified Human Infectious Diseases as a top hazard of concern:

Jurisdictions	
Kossuth County	Wesley

¹¹⁶ Molinari, N.M., Ortega-Sanchez, I.R., Messonnier, M., Thompson, W.W., Wortley, P.M., Weintraub, E., & Bridges, C.B. April 2007. "The annual impact of seasonal influenza in the US: measuring disease burden and costs." DOI: 10.1016/j.vaccine.2007.03.046.

Regional Vulnerabilities

The following table summarizes regional vulnerabilities; for jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 88: Regional Human Infectious Disease Vulnerabilities

Sector	Vulnerability
People	-Vulnerable populations include the very young, the very old, the unvaccinated, the economically vulnerable, and those with immunodeficiency disorders.
Economic	-Institutional settings such as prisons, dormitories, long-term care facilities, day cares, and schools are at higher risk to contagious diseases
Built Environment	-Poverty, rurality, underlying health conditions, and drug or alcohol use increase chronic and infectious disease rates
Infrastructure	-Large scale or prolonged events may cause businesses to close, which could lead to significant revenue loss and loss of income for workers
Critical Facilities	-Increased number of unoccupied business structures
Climate	-Transportation routes may be closed if a quarantine is put in place

Infrastructure Failure

The Iowa Hazard Mitigation Plan notes a variety of different occurrences which may be classified as infrastructure failure, including communication failure, energy failure, structural failure, and structural fire. The plan goes on to note that one potential cause of infrastructure failure is space weather/solar flares. Any sort of disruption in cell, electric, radio or other service may be considered a form of infrastructure failure. Community infrastructure that provides vital supplies such as electrical and water utilities are also vulnerable to both natural and technological hazards.

Vulnerability can largely be measured as a result of aging infrastructure. According to FEMA's *Strategic Foresight Initiative* published in June 2011, "...infrastructure in the United States is becoming more prone to failure as the average age of structures increases." The publication goes on to state that many necessary updates to infrastructure failure may be considered cost prohibitive due to rising construction costs.

According to the American Society of Civil Engineers' (ASCE) 2023 Infrastructure Report Card, Iowa received an overall grade of C. The Infrastructure Report Card is updated every four years with the goal of depicting the condition and performance of infrastructure systems. The Report Card utilizes letter grades similar to those used for school report cards. Using this classification, an "A" would indicate a state is exceeding expectations; an "F" is failing to meet expectations. Thus, a "C" indicates slightly below expected standards. Specifically, for Iowa, bridges, dams, wastewater, inland waterways, received a below expected score (C- to D). This is largely consistent with reports from local planning teams.¹¹⁷

Some jurisdictions have mentioned concerns of infrastructure failure, including Bancroft, Burt, Swea City, Wesley, and North Kossuth School District. Concerns include inadequate water/sewer systems, aging roads and other infrastructure, HVAC outages to schools, and threats to water storage.

Location

Infrastructure failure is not correlated to a specific geographic area.

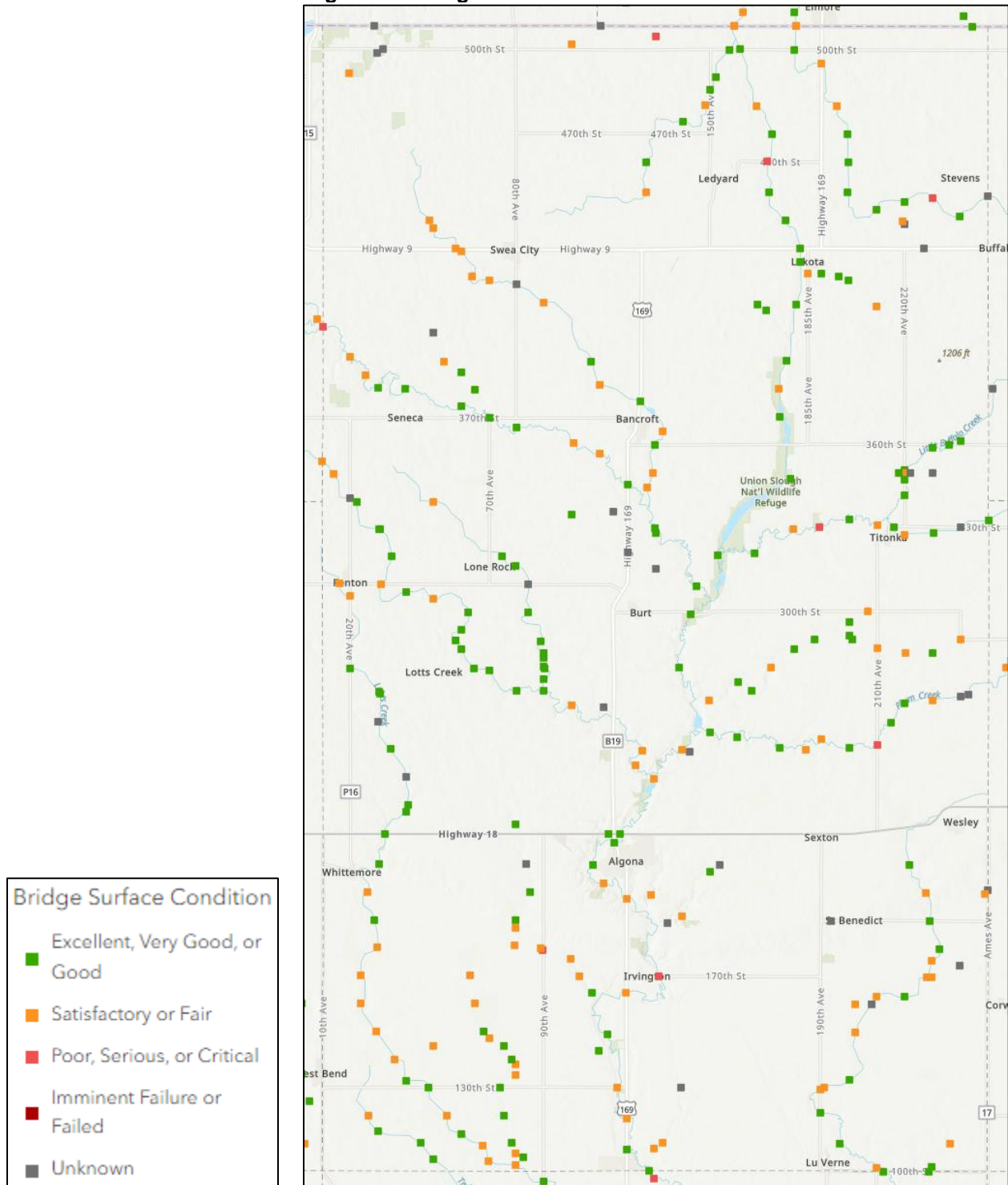
Extent

The extent of infrastructure failure events is hard to quantify given the lack of recorded events. Potential losses will likely be related to aging structures. The BTS National Bridge Inventory displays information describing the location, description, classification, and general condition of bridges located on public roads, such as interstate highways, U.S. highways, state and county roads, and publicly accessible bridges on federal and tribal lands. According to BTS, Kossuth County has 277 bridges with 9% of those bridges in poor condition and 91% in medium to fair condition.¹¹⁸ Figure 44 displays the bridge surface conditions for Kossuth County.

¹¹⁷ American Society of Civil Engineers. 2023. "2023 Iowa Infrastructure Report Card." <https://infrastructurereportcard.org/state-item/iowa/>

¹¹⁸ Bureau of Transportation Statistics. 2023. "County Transportation Profiles." <https://data.bts.gov/Research-and-Statistics/County-Transportation-Profiles/qdmf-cxm3/data>

Figure 44: Bridge Surface Conditions



Source: BTS, 2023¹¹⁹

¹¹⁹ Bureau of Transportation Statistics. October 2023. "National Bridge Inventory."
<https://www.arcgis.com/home/item.html?id=a0fa29a39fe444ac97d4337c569b9801>

Historical Occurrences

There is no known database for recording infrastructure failure, and thus, previous occurrences may not be calculated.

Average Annual Losses

Due to lack of data, potential losses are not calculated for this hazard.

Probability

With no recorded past events, future occurrences may not be calculated.

Community Top Hazard Status

The following table lists jurisdictions which identified Infrastructure Failure as a top hazard of concern:

Jurisdictions	
Bancroft	Wesley
Burt	North Kossuth School District
Swea City	

Regional Vulnerabilities

The following table summarizes regional vulnerabilities; for jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 89: Regional Infrastructure Failure Vulnerabilities

Sector	Vulnerability
People	-Vulnerable populations including the very young and the very old may not have the capability to properly care for their aging private infrastructure
Economic	-Building, bridge, or road closures may cause businesses to close temporarily, which could lead to significant revenue loss and loss of income for workers
Built Environment	-Aging fixtures such as roofs and siding make buildings vulnerable to failure
Infrastructure	-Aging infrastructure is particularly vulnerable
Critical Facilities	-Critical facilities may close if they are not properly maintained
Climate	-Space weather/solar flares can disrupt cell, electric, and radio services which could result in infrastructure failure
Other	-Severe winter storms, severe thunderstorms, and tornadoes can exacerbate this hazard

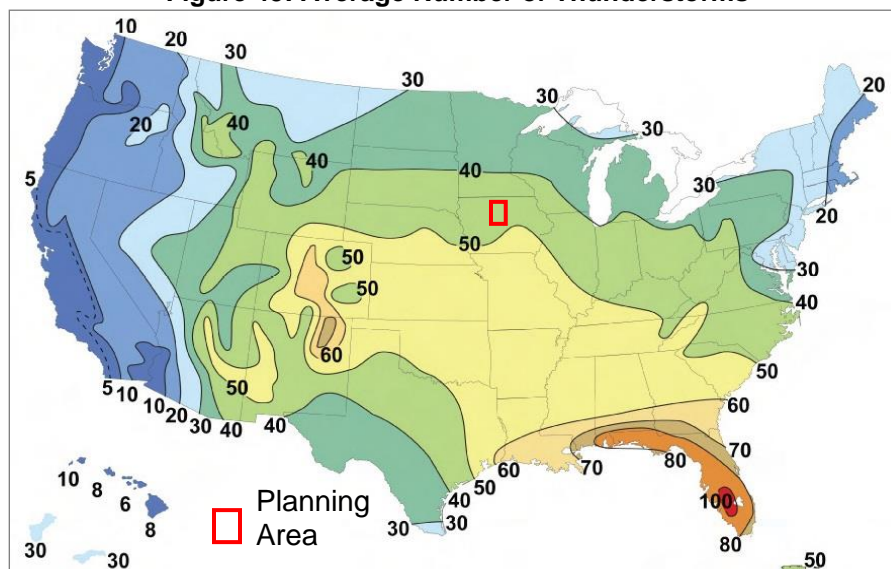
Severe Thunderstorms (Includes Hail and Lightning)

Severe thunderstorms are common and unpredictable seasonal events throughout Iowa. A thunderstorm is defined as a storm that contains lightning and thunder, which is caused by unstable atmospheric conditions. When the cold upper air sinks and the warm, moist air rises, storm clouds or “thunderheads” develop, resulting in thunderstorms. This can occur singularly, in clusters, or in lines.

Thunderstorms can develop in fewer than 30 minutes and can grow to an elevation of eight miles into the atmosphere. Lightning, by definition, is present in all thunderstorms and can cause harm to humans and animals, fires to buildings and agricultural lands, and electrical outages in municipal electrical systems. Lightning can strike up to 10 miles from the portion of the storm depositing precipitation. There are three primary types of lightning: intra-cloud, inter-cloud, and cloud to ground. While intra and inter-cloud lightning are more common, communities are potentially impacted when lightning comes in contact with the ground. Lightning generally occurs when warm air mixes with colder air masses resulting in atmospheric disturbances necessary for polarizing the atmosphere. Severe thunderstorms usually occur in the evening during the spring and summer months.

Economically, thunderstorms are generally beneficial in that they provide moisture necessary to support Iowa’s largest industry, agriculture. The majority of thunderstorms do not cause damage, but when they escalate to severe storms, the potential for damages increases. Damages can include crop losses from wind; property losses due to building and automobile damages from high wind, flash flooding, and death or injury to humans and animals from lightning, drowning, or getting struck by falling or flying debris. Figure 45 displays the average number of days with thunderstorms across the country each year. The planning area experiences an average of 40 to 50 thunderstorms over the course of one year.

Figure 45: Average Number of Thunderstorms



Source: NWS, 2017¹²⁰

¹²⁰ National Weather Service. 2017. “Introduction to Thunderstorms.” http://www.srh.noaa.gov/jetstream/tstorms/tstorms_intro.html.

Location

The entire county is at risk of severe thunderstorms and associated damages from heavy rain, lightning, hail, and thunderstorm level wind.

Extent

The geographic extent of a severe thunderstorm event may be large enough to impact the entire planning area (such as in the case of a squall line, derecho, or long-lived supercell) or just a few square miles, in the case of a single cell that marginally meets severe criteria.

The NWS defines a thunderstorm as severe if it contains hail that is one inch in diameter or capable of wind gusts of 58 mph or higher. The Tornado and Storm Research Organization (TORRO) scale is used to classify hailstones and provides some detail related to the potential impacts from hail. Table 90 outlines the TORRO Hail Scale.

Table 90: TORRO Hail Scale

TORRO Classification / Intensity	Typical Hail Diameter	Typical Damage Impacts
H0: Hard Hail	5 mm; (Pea size); 0.2 in	No damage
H1: Potentially Damaging	5 -15 mm (Marble) 0.2 – 0.6 in	Slight general damage to plants and crops
H2: Significant	10 -20 mm (Grape) 0.4 – 0.8 in.	Significant damage to fruit, crops, and vegetation
H3: Severe	20 -30 mm (Walnut) 0.8 – 1.2 in	Severe damage to fruit and crops, damage to glass and plastic structures
H4: Severe	30 -40 mm (Squash Ball) 1.2 – 1.6 in	Widespread damage to glass, vehicle bodywork damaged
H5: Destructive	40 – 50 mm (Golf ball) 1.6 – 2.0 in.	Wholesale destruction of glass, damage to tiled roofs; significant risk or injury
H6: Destructive	50 – 60 mm (Chicken Egg) 2.0 – 2.4 in	Grounded aircrafts damaged; brick walls pitted; significant risk of injury
H7: Destructive	60 – 75 mm (Tennis Ball) 2.4 – 3.0 in	Severe roof damage; risk of serious injuries
H8: Destructive	75 – 90 mm (Large Orange) 3.0 – 3.5 in.	Severe damage to structures, vehicles, airplanes; risk of serious injuries
H9: Super Hail	90 – 100 mm (Grapefruit) 3.5 – 4.0 in	Extensive structural damage; risk of severe or even fatal injuries to persons outdoors
H10: Super Hail	>100mm (Melon); >4.0 in	Extensive structural damage; risk of severe or even fatal injuries to persons outdoors

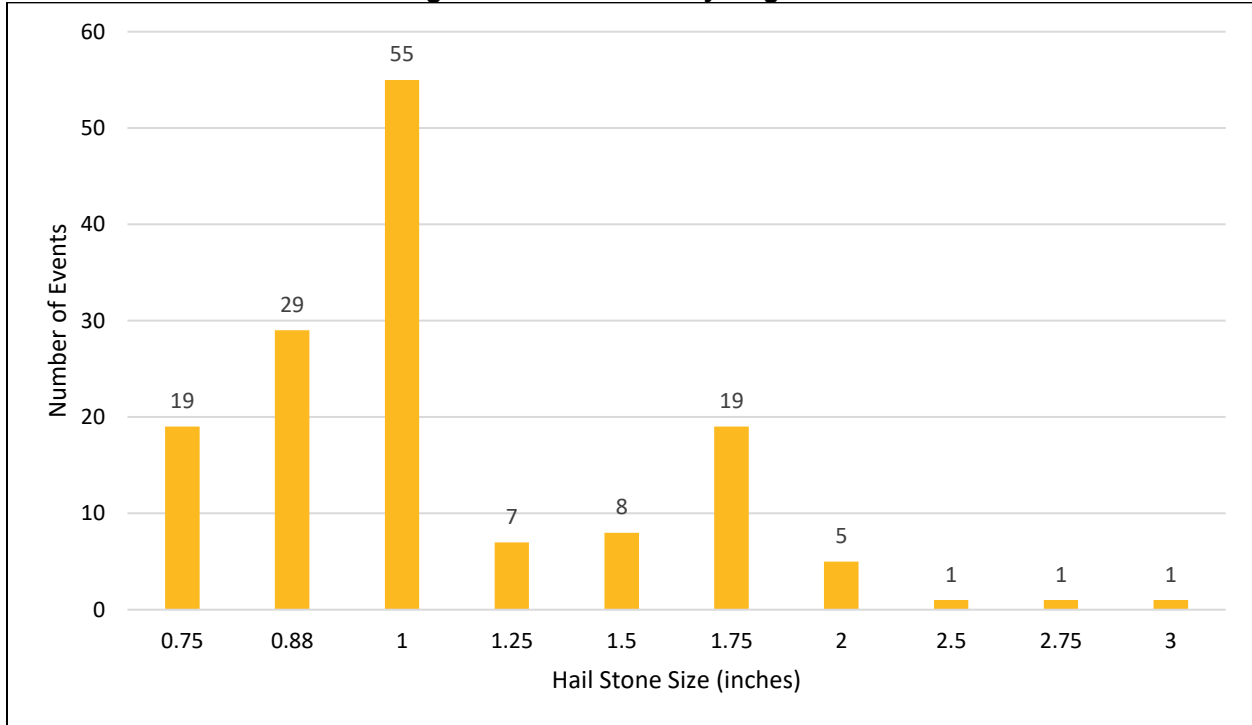
Source: TORRO, 2019¹²¹

Of the 145 hail events reported for the planning area, the average hailstone size was 1.15 inches. Events of this magnitude correlate to an H3 classification. It is reasonable to expect H3 classified

¹²¹ Tornado and Storm Research Organization. 2019. "Hail Scale." <http://www.torro.org.uk/hscale.php>.

events to occur several times in a year throughout the county. In addition, it is reasonable, based on the number of occurrences, to expect larger hailstones to occur in the county annually. The county has endured one H8 hail event (3.0 – 3.5 inches) during the period of record. Figure 46 shows hail events based on the size of the hail.

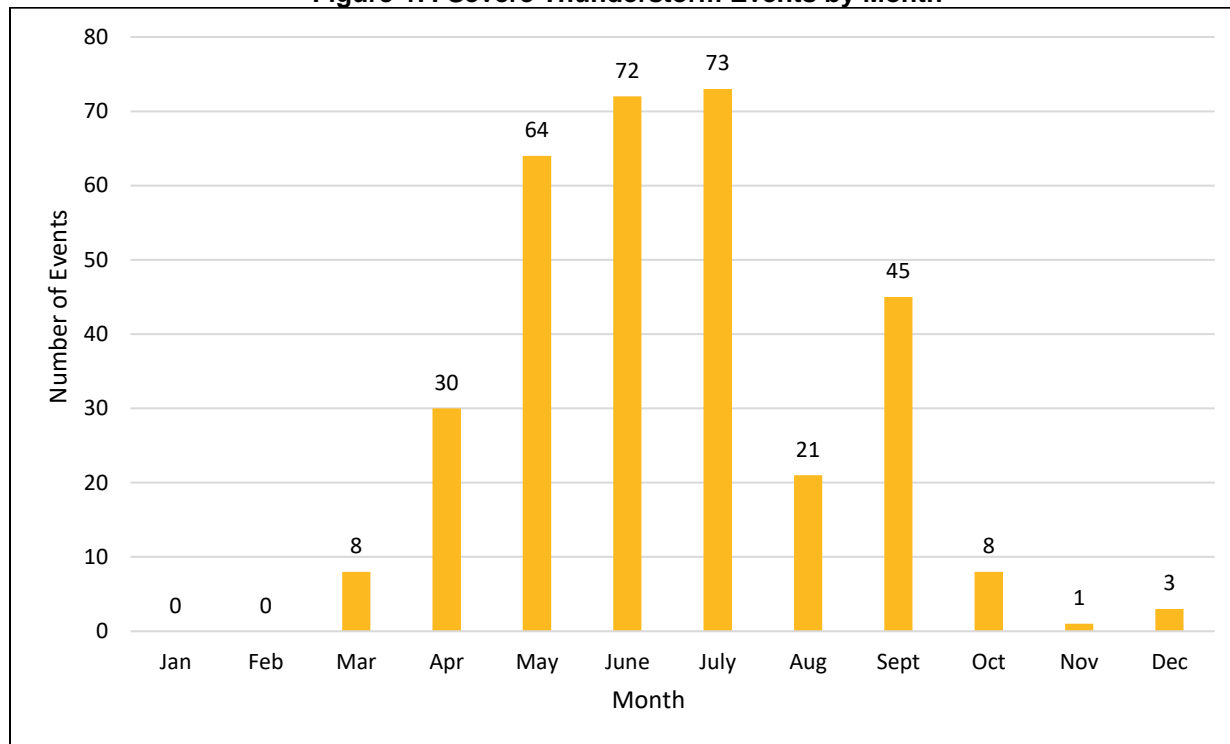
Figure 46: Hail Events by Magnitude



Source: NCEI, 1996-2022

Historical Occurrences

Severe thunderstorms in the planning area usually occur in the afternoon and evening from April through September (Figure 47).

Figure 47: Severe Thunderstorm Events by Month

Source: NCEI, 1996-2022

The NCEI reports events as they occur in each community. A single severe thunderstorm event can affect multiple communities and counties at a time; the NCEI reports these large scale, multi-county events as separate events. The result is a single thunderstorm event covering the entire region could be reported by the NCEI as several events.

The NCEI reports a total of 145 hail, 47 heavy rain, 3 lightning, and 130 thunderstorm wind events in the planning area from 1996 to 2022. In total these events were responsible for \$3,693,000 in property damages. The USDA RMA data shows that severe thunderstorms caused \$92,341,400 in crop damages. No injuries or deaths from these events were reported.

Average Annual Damages

The average damage per event estimate was determined based upon recorded damages from NCEI Storm Events Database since 1996 and number of historical occurrences. This does not include losses from displacement, functional downtime, economic loss, injury, or loss of life. Severe thunderstorms cause an average of \$136,778 per year in property damages and \$4,014,826 in crop damages.

Table 91: Severe Thunderstorms Loss Estimate

Hazard Type	Number of Events ¹	Average Events Per Year	Total Property Loss ¹	Average Annual Property Loss	Total Crop Loss ²	Average Annual Crop Loss
Hail	145	5.4	\$617,000	\$22,852	\$92,341,000	\$4,014,826
Heavy Rain	47	1.7	\$0	\$0		
Lightning	3	0.1	\$14,000	\$519		

Hazard Type	Number of Events ¹	Average Events Per Year	Total Property Loss ¹	Average Annual Property Loss	Total Crop Loss ²	Average Annual Crop Loss
Thunderstorm Wind	130	4.8	\$3,062,000	\$113,407		
Total	325	12	\$3,693,000	\$136,778	\$92,341,000	\$4,014,826

Source: 1 Indicates data is from NCEI (1996 to 2022); 2 Indicates data is from USDA RMA (2000 to 2022)

Probability

Based on historical records and reported events, severe thunderstorms events are likely to occur on an annual basis. The NCEI reported a severe thunderstorm 27 out of 27 years, resulting in a 100 percent chance for severe thunderstorms to occur annually.

Community Top Hazard Status

The following table lists jurisdictions which identified Severe Thunderstorms as a top hazard of concern:

Jurisdictions	
Kossuth County	Ledyard
Algona	Lone Rock
Bancroft	Lu Verne
Burt	Titonka
Fenton	Whittemore
Lakota	North Kossuth School District

Regional Vulnerabilities

The following table provides information related to regional vulnerabilities; for jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 92: Regional Thunderstorm Vulnerabilities

Sector	Vulnerability
People	-Elderly citizens with decreased mobility may have trouble evacuating or seeking shelter -Mobile home residents are risk of injury and damage to their property if the mobile home is not anchored properly -Injuries can occur from not seeking shelter, standing near windows, and shattered windshields in vehicles
Economic	-Damages to buildings and property can cause significant losses to business owners and employees
Built Environment	-Buildings are at risk to hail damage -Downed trees and tree limbs -Roofs, siding, windows, gutters, HVAC systems, etc. can incur damage
Infrastructure	-High winds and lightning can cause power outages and down power lines -Roads may wash out from heavy rains and become blocked from downed tree limbs
Critical Facilities	-Power outages are possible -Critical facilities may sustain damage from hail, lightning, and wind
Climate	-Changes in seasonal precipitation and temperature normals can increase frequency and magnitude of severe storm events

Severe Winter Storms

Severe winter storms are an annual occurrence in Iowa. Winter storms can bring extreme cold, freezing rain, heavy or drifting snow, and blizzards. Blizzards are particularly dangerous due to drifting snow and the potential for rapidly occurring whiteout conditions which greatly inhibit vehicular traffic. Generally, winter storms occur between the months of November and March but may occur as early as October and as late as April. Heavy snow is usually the most defining element of a winter storm. Large snow events can cripple an entire jurisdiction by hindering transportation, knocking down tree limbs and utility lines, and structurally damaging buildings.

Freezing Rain

Along with snow events, winter storms also have the potential to deposit significant amounts of ice. Ice buildup on tree limbs and power lines can cause them to collapse. This is most likely to occur when rain falls that freezes upon contact, especially in the presence of wind. Freezing rain is the name given to rain that falls when surface temperatures are below freezing. Unlike a mixture of rain and snow, ice pellets or hail, freezing rain is made entirely of liquid droplets. Freezing rain can also lead to many problems on the roads, as it makes them slick, causing automobile accidents, and making vehicle travel difficult.

Blizzards

A blizzard can be defined as “blowing and/or falling snow with winds of at least 35 mph, reducing visibilities to a quarter of a mile or less for at least three hours”.¹²² Blizzards are particularly dangerous due to drifting snow and the potential for rapidly occurring whiteout conditions, which greatly inhibits vehicular traffic. Heavy snow is usually the most defining element of a winter storm. Large snow events can cripple an entire jurisdiction for several days by hindering transportation, knocking down tree limbs and utility lines, structurally damaging buildings, and injuring or killing crops and livestock.

Location

The entire county is at risk of severe winter storms.

Extent

The NWS developed the Sperry-Piltz Ice Accumulation Index (SPIA) to predict the accumulation of ice and resulting damages. The SPIA assesses total precipitation, wind, and temperatures to predict the intensity of ice storms. Figure 48 shows the SPIA index.

¹²² National Weather Service. 2022. “Winter Weather Safety.” <https://www.weather.gov/dmx/wintersafety>.

Figure 48: SPIA Index

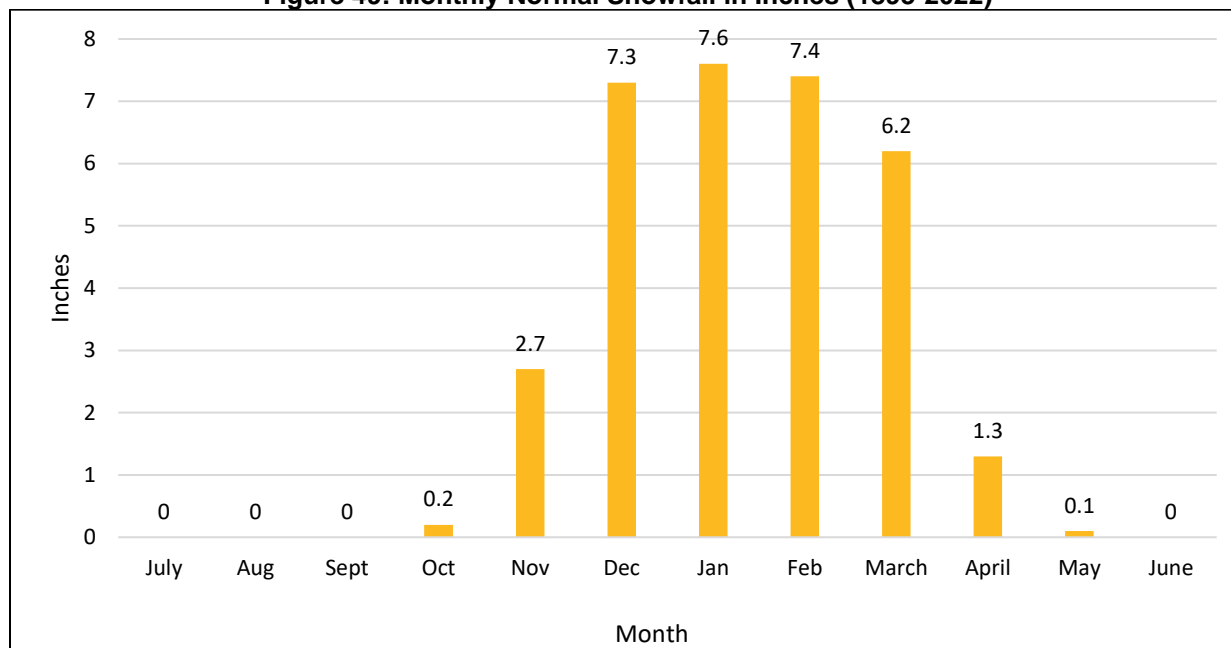
ICE DAMAGE INDEX	*AVERAGE ICE AMOUNT (in inches) <i>Revised: Oct. 2011</i>	WIND (mph)	DAMAGE AND IMPACT DESCRIPTIONS
0	<0.25	<15	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	0.10 – 0.25	15 – 25	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
	0.25 – 0.50	>15	
2	0.10 – 0.25	25 – 35	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
	0.25 – 0.50	15 – 25	
	0.50 – 0.75	>15	
3	0.10 – 0.25	> – 35	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
	0.25 – 0.50	25 – 35	
	0.50 – 0.75	15 – 25	
	0.75 – 1.00	>15	
4	0.25 – 0.50	> – 35	Prolonged and widespread utility interruptions with extensive damage to main distribution feeder lines and some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
	0.50 – 0.75	25 – 35	
	0.75 – 1.00	15 – 25	
	1.00 – 1.50	>15	
5	0.50 – 0.75	> – 35	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.75 – 1.00	> – 25	
	1.00 – 1.50	> – 15	
	> 1.50	Any	

(Categories of damage are based upon combinations of precipitation totals, temperatures and wind speeds/directions.)

Source: SPIA-Index, 2017¹²³

Average monthly snowfall for the planning area is shown in (Figure 49), which shows the snowiest months are between December and March. A common snow event (likely to occur annually) will result in accumulation totals between one and six inches. Often these snow events are accompanied by high winds. It is reasonable to expect wind speeds of 25 to 35 mph with gusts reaching 50 mph or higher. Strong winds and low temperatures can combine to produce extreme wind chills of 20°F to 40°F below zero.

¹²³ SPIA-Index. 2009. "Sperry-Piltz Ice Accumulation Index." Accessed June 2017. <http://www.spia-index.com/index.php>.

Figure 49: Monthly Normal Snowfall in Inches (1893-2022)

Source: High Plains Regional Climate Center, 2023

Historical Occurrences

Due to the regional scale of severe winter storms, the NCEI reports events as they occur in each county. According to the NCEI, there were a combined 109 severe winter storm events for the planning area from 1996 to 2022. January had the most recorded events for the planning area. These recorded events caused a total of \$1,781,725 in reported property damages and \$1,923,836 in crop damages.

According to the NCEI, there were two deaths associated with winter storms in the planning area, both from stranded individuals attempting to walk for help. Additional information from these events from NCEI and reported by each community are listed in *Section Seven: Community Profiles*.

Average Annual Damages

The average damage per event estimate was determined based upon NCEI Storm Events Database since 1996 and includes aggregated calculations for each of the five types of winter weather as provided in the database. This does not include losses from displacement, functional downtime, economic loss, injury, or loss of life. Severe winter storms have caused an average of \$65,990 per year in property damage and \$83,645 per year in crop damages for the planning area.

Table 93: Severe Winter Storm Loss Estimate

Hazard Type	Number of Events ¹	Average Events Per Year ¹	Total Property Loss ¹	Average Annual Property Loss ¹	Total Crop Loss ²	Average Annual Crop Loss ²
Blizzard	36	1.3	\$575,000	\$21,296	\$1,923,836	\$83,645
Heavy Snow	21	0.8	\$389,545	\$14,428		
Ice Storm	14	0.5	\$226,280	\$8,381		
Winter Storm	37	1.4	\$590,900	\$21,885		

Hazard Type	Number of Events ¹	Average Events Per Year ¹	Total Property Loss ¹	Average Annual Property Loss ¹	Total Crop Loss ²	Average Annual Crop Loss ²
Winter Weather	1	0.04	\$0	\$0		
Total	109	4	\$1,781,725	\$65,990	\$1,923,836	\$83,645

Source: 1 Indicates data is from NCEI (1996-2022); 2 Indicates data is from USDA RMA (2000-2022)

Probability

Based on historical records and reported events, severe winter storm events are likely to occur on an annual basis. The NCEI reported a severe winter storm event in 27 of 27 years, resulting in 100 percent chance annually for severe winter storms.

Community Top Hazard Status

The following table lists jurisdictions which identified Severe Winter Storms as a top hazard of concern:

Jurisdictions	
Kossuth County	Lone Rock
Algona	Lu Verne
Bancroft	Swea City
Burt	Titonka
Fenton	Wesley
Lakota	Whittemore
Ledyard	Algona School District

Regional Vulnerabilities

The following table provides information related to regional vulnerabilities; for jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 94: Regional Severe Winter Storm Vulnerabilities

Sector	Vulnerability
People	-Elderly citizens are at higher risk to injury or death, especially during extreme cold and heavy snow accumulations -Citizens without adequate heat and shelter at higher risk of injury or death
Economic	-Closed roads and power outages can cripple a region for days, leading to significant revenue loss and loss of income for workers
Built Environment	-Heavy snow loads can cause roofs to collapse -Significant tree damage possible, downing power lines and blocking roads
Infrastructure	-Heavy snow and ice accumulation can lead to downed power lines and prolonged power outages -Transportation may be difficult or impossible during blizzards, heavy snow, and ice events
Critical Facilities	-Emergency response and recovery operations, communications, water treatment plants, and others are at risk to power outages, impassable roads, and other damages
Climate	-Changes in seasonal precipitation and temperature normals can increase frequency and magnitude of severe winter storm events

Terrorism and Civil Unrest

Terrorism and civil disorder are broad terms typically used by law enforcement to describe groups of people protesting major socio-political problems by choosing not to observe a law or regulation or the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof in furtherance of political or social objectives. Though peaceful public demonstrations are allowed under US Federal law, any domestic situations such as a strike or riot involving three or more people could be considered civil disorder if the demonstration has devolved into having a potential for causing injuries, casualties, or property damage.^{124,125}

According to the Federal Bureau of Investigation (FBI), there is no single, universally accepted definition of terrorism. Terrorism is defined in the Code of Federal Regulations as “the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof in furtherance of political or social objectives”.¹²⁶ Terrorist activities are also classified based on motivation behind the event (such as religious fundamentalism, national separatist movements, and social revolutionary movements). Terrorism can also be random with no ties to ideological reasoning.

The FBI further describes terrorism as either domestic or international, depending on the origin, base, and objectives of the terrorist organization. For this plan, the following definitions from the FBI will be used:

- Domestic terrorism is the unlawful use, or threatened use, of force or violence by a group or individual based and operating entirely within the United States or Puerto Rico without foreign direction committed against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof in furtherance of political or social objectives.
- International terrorism involves violent acts or acts dangerous to human life that are a violation of the criminal laws of the United States or any state, or that would be a criminal violation if committed within the jurisdiction of the United States or any state. These acts appear to be intended to intimidate or coerce a civilian population, influence the policy of a government by intimidation or coercion, or affect the conduct of a government by assassination or kidnapping. International terrorist acts occur outside the United States or transcend national boundaries in terms of the means by which they are accomplished, the persons they appear intended to coerce or intimidate, or the locale in which their perpetrators operate or seek asylum.

There are different types of terrorism depending on the target of attack, which are:

- Political Terrorism
- Bio-Terrorism
- Cyber-Terrorism
- Eco-Terrorism

¹²⁴ Civil Disorders, 18 U.S. Code § 231-233 (1992)

¹²⁵ Terrorism, 28 U.S. Code § 0.85.

¹²⁶ Terrorism, 28 U.S. Code Section 0.85

- Nuclear-Terrorism
- Narco-Terrorism
- Agro-Terrorism

Terrorist activities are also classified based on motivation behind the event such as ideology (e.g., religious fundamentalism, national separatist movements, and social revolutionary movements). Terrorism can also be random with no ties to ideological reasoning.

The FBI also provides clear definitions of a terrorist incident and prevention:

- A terrorist *incident* is a violent act or an act dangerous to human life, in violation of the criminal laws of the United States, or of any state, to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.
- Terrorism *prevention* is a documented instance in which a violent act by a known or suspected terrorist group or individual with the means and a proven propensity for violence is successfully interdicted through investigative activity.

Cyber-terrorism is an incident involving the theft or modification of information on computer systems that can compromise the system or potentially disrupt essential services. A cyber-terrorism incident can impact city agencies, private utilities, or critical infrastructure/key resources like a power grid, public transportation system, and wireless networks. Cyber infrastructure includes electronic information and communications systems, and the information contained in those systems. Computer systems, control systems such as Supervisory Control and Data Acquisition (SCADA) systems, and networks such as the Internet are all part of cyber infrastructure.

Nation-states, criminal organizations, terrorists, and other malicious actors conduct attacks against critical cyber infrastructure on an ongoing basis. The impact of a serious cyber incident or successful cyber-attack would be devastating to state, local, tribal, and territorial governments' assets, systems, and/or networks; the information contained in those networks; and the confidence of those who trust governments to secure those systems.

A cyber incident can affect a system's:

- Confidentiality: protecting a user's private information
- Integrity: ensuring that data is protected and cannot be altered by unauthorized parties
- Availability: keeping services running and giving administration access to key networks and controls.

"Many of the Nation's essential and emergency services, as well as our critical infrastructure, rely on the uninterrupted use of the Internet and the communications systems, data, monitoring, and control systems that comprise our cyber infrastructure. A cyber-attack could be debilitating to our highly interdependent critical infrastructure and key resources and ultimately to our economy and national security."

- National Strategy for Homeland Security

The Department of Homeland Security and its affiliated agencies are responsible for disseminating any information regarding terrorist activities in the country. The system in place is the National Terrorism Advisory System (NTAS). NTAS replaced the Homeland Security Advisory

System (HSAS) which was the color-coded system put in place after the September 11th attacks by Presidential Directive 5 and 8 in March of 2002. NTAS replaced HSAS in 2011.

NTAS is based on a system of analyzing threat levels and providing either an imminent threat alert or an elevated threat alert.

An **Imminent Threat Alert** warns of a credible, specific and impending terrorist threat against the United States.

An **Elevated Threat Alert** warns of a credible terrorist threat against the United States.

The Department of Homeland Security, in conjunction with other federal agencies, will decide whether a threat alert of one kind or the other should be issued should credible information be available. Each alert provides a statement summarizing the potential threat and what, if anything should be done to ensure public safety.

U.S. Code on civil disorder considers the following actions to be civil disorder:

- (1) Whoever teaches or demonstrates to any other person the use, application, or making of any firearm or explosive or incendiary device, or technique capable of causing injury or death to persons, knowing or having reason to know or intending that the same will be unlawfully employed for use in, or in furtherance of, a civil disorder which may in any way or degree obstruct, delay, or adversely affect commerce or the movement of any article or commodity in commerce or the conduct or performance of any federally protected function; or
- (2) Whoever transports or manufactures for transportation in commerce any firearm, or explosive or incendiary device, knowing or having reason to know or intending that the same will be used unlawfully in furtherance of a civil disorder; or
- (3) Whoever commits or attempts to commit any act to obstruct, impede, or interfere with any fireman or law enforcement officer lawfully engaged in the lawful performance of his official duties incident to and during the commission of a civil disorder which in any way or degree obstructs, delays, or adversely affects commerce or the movement of any article or commodity in commerce or the conduct or performance of any federally protected function

Primarily, threat assessment, mitigation and response to civil unrest and terrorism are federal and state directives and work primarily with local law enforcement. The Office of Infrastructure Protection within the Federal Department of Homeland Security is a component within the National Programs and Protection Directorate.

Location

Terrorism and Civil Unrest can occur throughout the entire planning area. Urban areas, schools, and government buildings are more likely to see terroristic activity. Concerns are primarily related to political unrest, activists' groups, and others that may be targeting businesses, police, and federal buildings. In schools, concerns center on political terrorism and are generally perpetrated erratically by loners. In rural areas, concerns are primarily related to agro-terrorism and tampering with water supplies. However, water systems of any size could be vulnerable.

Extent

Incidents of civil disorder and terrorism can vary greatly in scale and magnitude, depending on the location of the attack, number of protesters, and reasoning for unrest.

Historical Occurrences

To identify any incidence of civil disorder or terrorism in the planning area, data was gathered from the Global Terrorism Database, maintained by the University of Maryland and the National

Consortium for the Study of Terrorism and Responses to Terrorism (START). This database contains information for over 140,000 terrorist attacks. According to this database, there were zero civil disorder or terrorist incidents within the planning area from 1970-2017.¹²⁷

Average Annual Damages

According to the START Global Terrorism Database (1970-2017), no civil unrest or terrorist events have occurred in the planning area. As there were no such events within the planning area, there were no average annual damages.

Probability

Given zero incidences over a 48-year period, the annual probability for civil unrest and terrorism in the planning area has a less than one percent chance of occurring during any given year. This does not indicate that an event will never occur within the planning area, only that the likelihood of such an event is incredibly low.

Community Top Hazard Status

No jurisdictions identified Terrorism and Civil Unrest as a top hazard of concern.

Regional Vulnerabilities

The following table provides information related to regional vulnerabilities; for jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 95: Regional Terrorism Vulnerabilities

Sector	Vulnerability
People	-Police officers and first responders at risk of injury or death -Civilians at risk of injury or death -Students and staff at school facilities at risk of injury or death from school shootings
Economic	-Damaged businesses can cause loss of revenue and loss of income for workers -Agricultural attacks could cause significant economic losses for the region -Risk of violence in an area can reduce income flowing into and out of that area
Built Environment	-Targeted buildings may sustain heavy damage
Infrastructure	-Water supply, power plants, utilities may be damaged
Critical Facilities	-Police stations, government offices, and schools are at a higher risk
Climate	-None

¹²⁷ National Consortium for the Study of Terrorism and Responses to Terrorism. 2018. Global Terrorism Database [Data file]. Retrieved from <https://www.start.umd.edu/gtd>.

Tornado and Windstorm

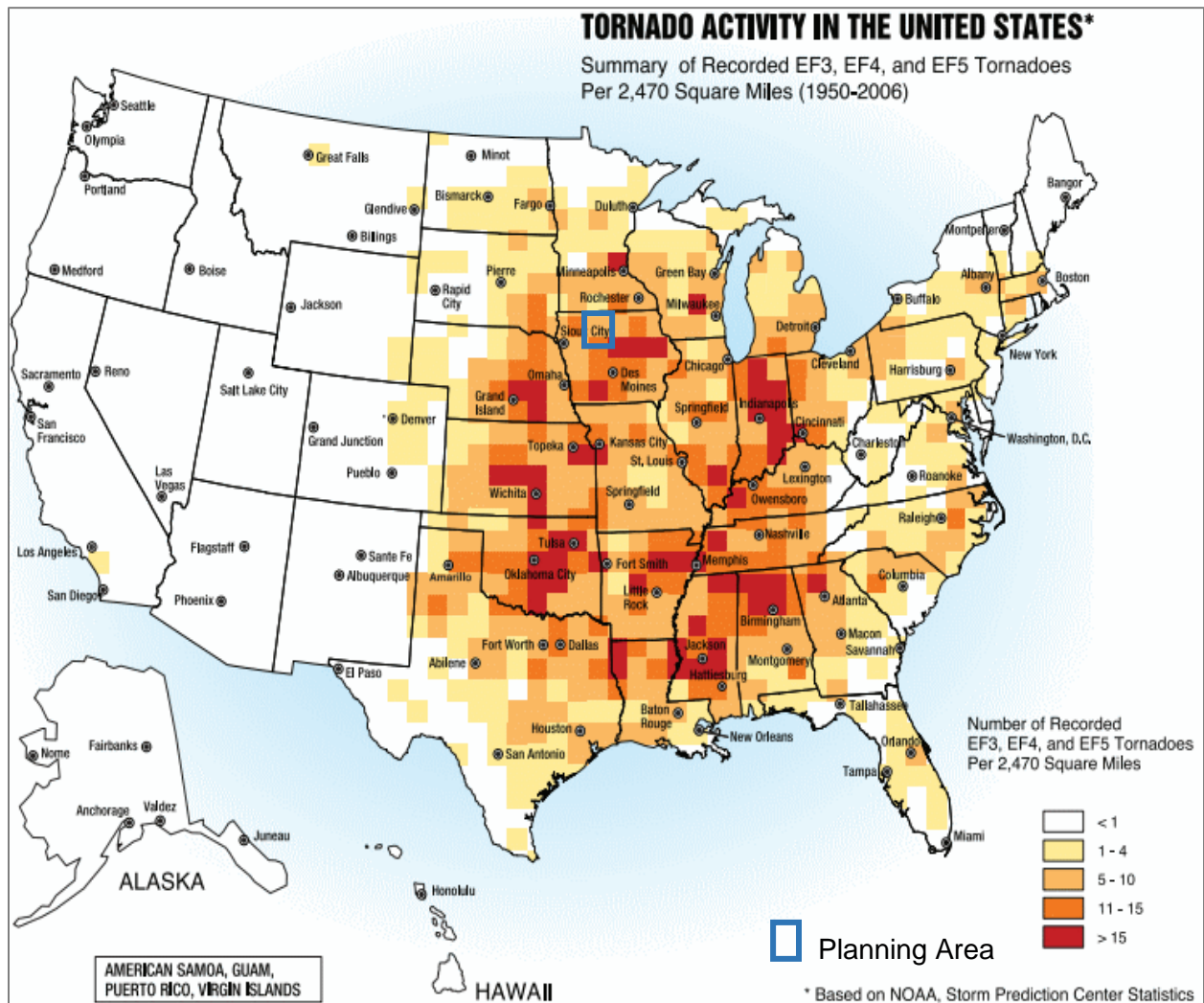
A tornado is typically associated with a supercell thunderstorm. For a rotation to be classified as a tornado, three characteristics must be met:

- There must be a microscale rotating area of wind, ranging in size from a few feet to a few miles wide;
- The rotating wind, or vortex, must be attached to a convective cloud base and must be in contact with the ground; and,
- The spinning vortex of air must have caused enough damage to be classified by the Fujita Scale as a tornado.

Once tornadoes are formed, they can be extremely violent and destructive. They have been recorded all over the world but are most prevalent in the American Midwest and South, in an area known as “Tornado Alley.” Approximately 1,250 tornadoes are reported annually in the contiguous United States. Tornadoes can travel distances of over 100 miles and reach over 11 miles above ground. Tornadoes usually stay on the ground for no more than 20 minutes. Nationally, the tornado season typically occurs between April and July. On average, 80% of tornadoes occur between noon and midnight. In Iowa, 64% of all tornadoes occur in the months of May, June, and July.

Iowa is ranked sixth in the nation for tornado frequency with an annual average of 47 tornadoes between 1985 and 2014.¹²⁸ Figure 50 shows the tornado activity in the United States as a summary of recorded EF3, EF4, and EF5 tornadoes per 2,470 square miles from 1950 through 2006.

¹²⁸ NOAA. “U.S. Annual Averages: Tornadoes by State (1985-2014)”. Accessed April 2022. <https://www.spc.noaa.gov/wcm/ustormaps/1985-2014-stateavgatornadoes.png>

Figure 50: Tornado Activity in the United States

Source: FEMA, 2008¹²⁹

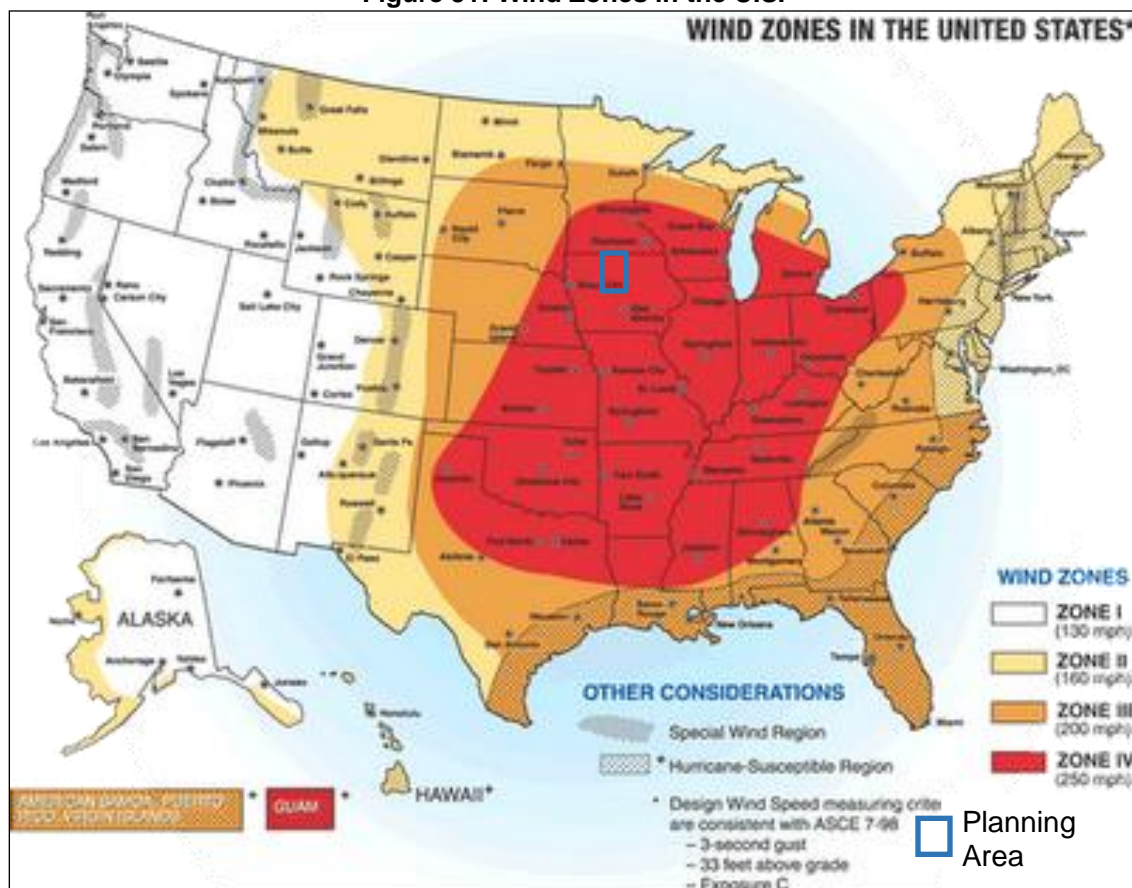
Windstorms typically accompany severe thunderstorms, severe winter storms, tornadoes, and other large low-pressure systems, which can cause significant crop damage, downed power lines, loss of electricity, traffic flow obstructions, and significant property damage including to trees and center-pivot irrigation systems.

The National Weather Service (NWS) defines high winds as sustained wind speeds of 40 mph or greater lasting for one hour or longer, or winds of 58 mph or greater for any duration.¹³⁰ The NWS issues High Wind Advisories when there are sustained winds of 25 to 39 mph and/or gusts to 57 mph. Figure 51 shows the wind zones in the United States. The wind zones are based on the maximum wind speeds that can occur from a tornado or hurricane event. The planning area is located in Zone IV which has maximum winds of 250 mph, equivalent to an EF5 tornado.

¹²⁹ Federal Emergency Management Agency. August 2008. "Taking Shelter From the Storm: Building a Safe Room for Your Home or Small Business, 3rd edition."

¹³⁰ National Weather Service. 2017. "Glossary." <http://w1.weather.gov/glossary/index.php?letter=h>.

Figure 51: Wind Zones in the U.S.

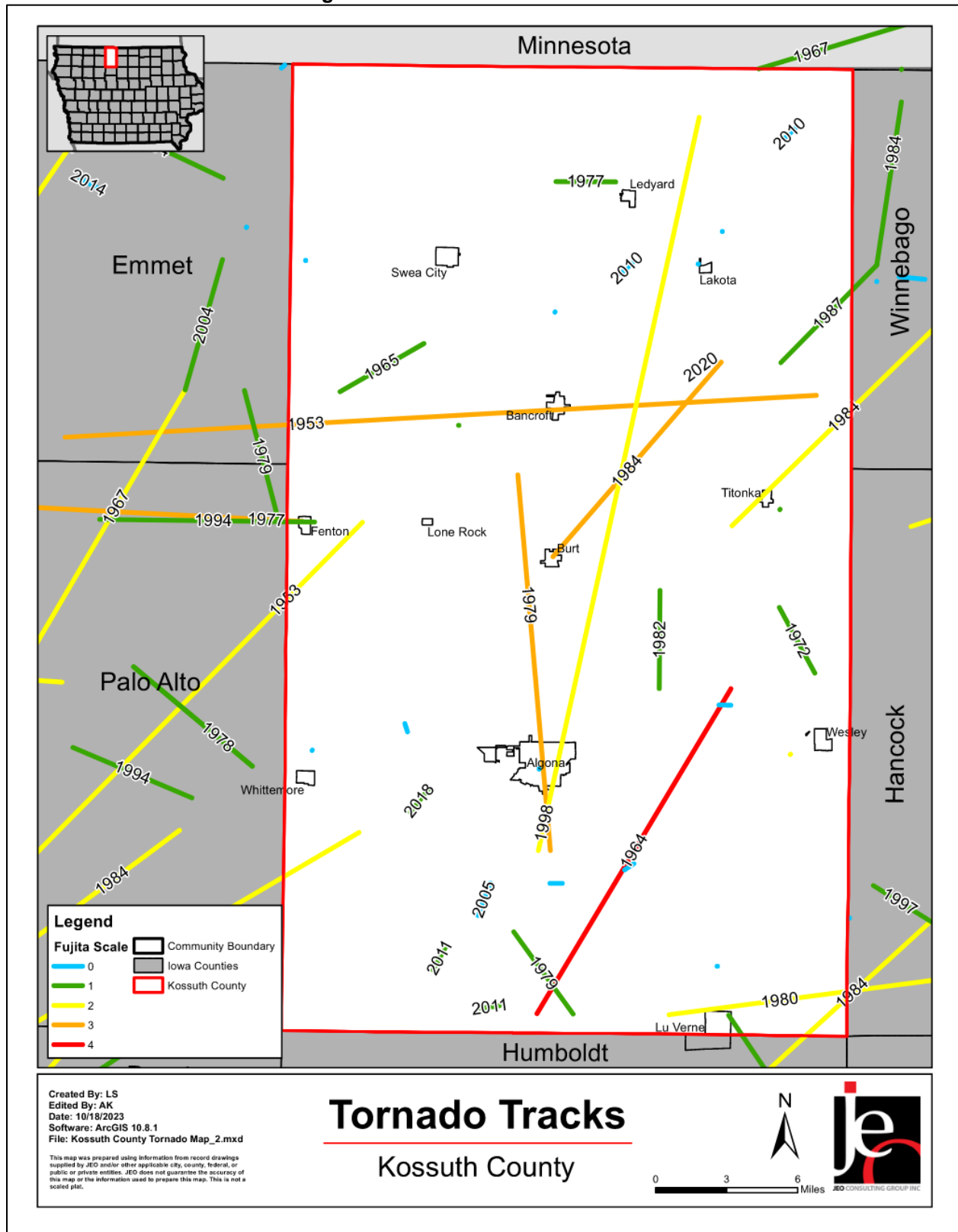


Source: FEMA, 2016

Location

Windstorms commonly occur throughout Kossuth County and tornadoes can take place anywhere in the county. The impacts would likely be greater in more densely populated areas, such as the City of Algona. Figure 52 shows the historical track locations across the region according to the Midwestern Regional Climate Center (1950-2022). A few significant tornado events have directly impacted communities located in the planning area between 1996 and 2022. These include a 1998 F2 that impacted Algona, and two EF1 tornadoes that impacted the St. Joseph community in 2011.

Figure 52: Historical Tornado Tracks



Extent

The Beaufort Wind Scale can be used to classify wind strength, while the magnitude of tornadoes is measured by the Enhanced Fujita Scale. Table 96 outlines the Beaufort scale, provides wind speed ranking, range of wind speeds per ranking, and a brief description of conditions for each ranking.

Table 96: Beaufort Wind Ranking

Beaufort Wind Force Ranking	Range of Wind	Conditions
0	<1 mph	Smoke rises vertically
1	1 – 3 mph	Direction shown by smoke but not wind vanes
2	4 – 7 mph	Wind felt on face; leaves rustle; wind vanes move
3	8 – 12 mph	Leaves and small twigs in constant motion
4	13 – 18 mph	Raises dust and loose paper; small branches move
5	19 – 24 mph	Small trees in leaf begin to move
6	25 – 31 mph	Large branches in motion; umbrellas used with difficulty
7	32 – 38 mph	Whole trees in motion; inconvenience felt when walking against the wind
8	39 – 46 mph	Breaks twigs off tree; generally, impedes progress
9	47 – 54 mph	Slight structural damage; chimneypots and slates removed
10	55 – 63 mph	Trees uprooted; considerable structural damages; improperly or mobiles homes with no anchors turned over
11	64 – 72 mph	Widespread damages; very rarely experienced

Source: Storm Prediction Center, 2017¹³¹

Using the NCEI reported events, the most common windstorm event in the planning area is a level 10 on the Beaufort Wind Ranking scale. The reported high wind events ranged from 40 mph to 70 mph, with an average speed of 56 mph.

The Enhanced Fujita Scale replaced the Fujita Scale in 2007. The Enhanced Fujita Scale does not measure tornadoes by their size or width, but rather the amount of damage caused to human-built structures and trees after the event. The official rating category provides a common benchmark that allows comparisons to be made between different tornadoes. The enhanced scale classifies EF0-EF5 damage as determined by engineers and meteorologists across 28 different types of damage indicators, including different types of building and tree damage. To establish a rating, engineers and meteorologists examine the damage, analyze the ground-swirl patterns, review damage imagery, collect media reports, and sometimes utilize photogrammetry and videogrammetry. Based on the most severe damage to any well-built frame house, or any comparable damage as determined by an engineer, an EF-Scale number is assigned to the tornado.

¹³¹ Storm Prediction Center: National Oceanic and Atmospheric Administration. 1805. "Beaufort Wind Scale." <http://www.spc.noaa.gov/fag/tornado/beaufort.html>.

The following tables summarize the Enhanced Fujita Scale and damage indicators. According to a recent report from the National Institute of Science and Technology on the Joplin Tornado, tornadoes rated EF3 or lower account for around 96 percent of all tornado damages.¹³²

Table 97: Enhanced Fujita Scale

Storm Category	3 Second Gust (mph)	Damage Level	Damage Description
EF0	65-85 mph	Gale	Some damages to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages to sign boards.
EF1	86-110 mph	Weak	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages might be destroyed.
EF2	111-135 mph	Strong	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
EF3	136-165 mph	Severe	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.
EF4	166-200 mph	Devastating	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown, and large missiles generated.
EF5	200+ mph	Incredible	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-enforced concrete structures badly damaged.
EF No rating	--	Inconceivable	Should a tornado with a maximum wind speed in excess of F5 occur, the extent and types of damage may not be conceived. A number of missiles such as iceboxes, water heaters, storage tanks, automobiles, etc. will create serious secondary damage on structures.

Source: NOAA; FEMA

Table 98: Enhanced Fujita Scale Damage Indicator

Number	Damage Indicator	Number	Damage Indicator
1	Small barns, farm outbuildings	15	School - 1-story elementary (interior or exterior halls)
2	One- or two-family residences	16	School - Junior or Senior high school
3	Single-wide mobile home (MHSW)	17	Low-rise (1-4 story) bldg.
4	Double-wide mobile home	18	Mid-rise (5-20 story) bldg.

¹³² Kuligowski, E.D., Lombardo, F.T., Phan, L.T., Levitan, M.L., & Jorgensen, D.P. March 2014. "Final Report National Institute of Standards and Technology (NIST) Technical Investigation of the May 22, 2011, Tornado in Joplin, Missouri."

Number	Damage Indicator	Number	Damage Indicator
5	Apartment, condo, townhouse (3 stories or less)	19	High-rise (over 20 stories)
6	Motel	20	Institutional bldg. (hospital, govt. or university)
7	Masonry apartment or motel	21	Metal building system
8	Small retail bldg. (fast food)	22	Service station canopy
9	Small professional (doctor office, branch bank)	23	Warehouse (tilt-up walls or heavy timber)
10	Strip mall	24	Transmission line tower
11	Large shopping mall	25	Free-standing tower
12	Large, isolated ("big box") retail bldg.	26	Free standing pole (light, flag, luminary)
13	Automobile showroom	27	Tree - hardwood
14	Automotive service building	28	Tree - softwood

Source: NOAA; FEMA

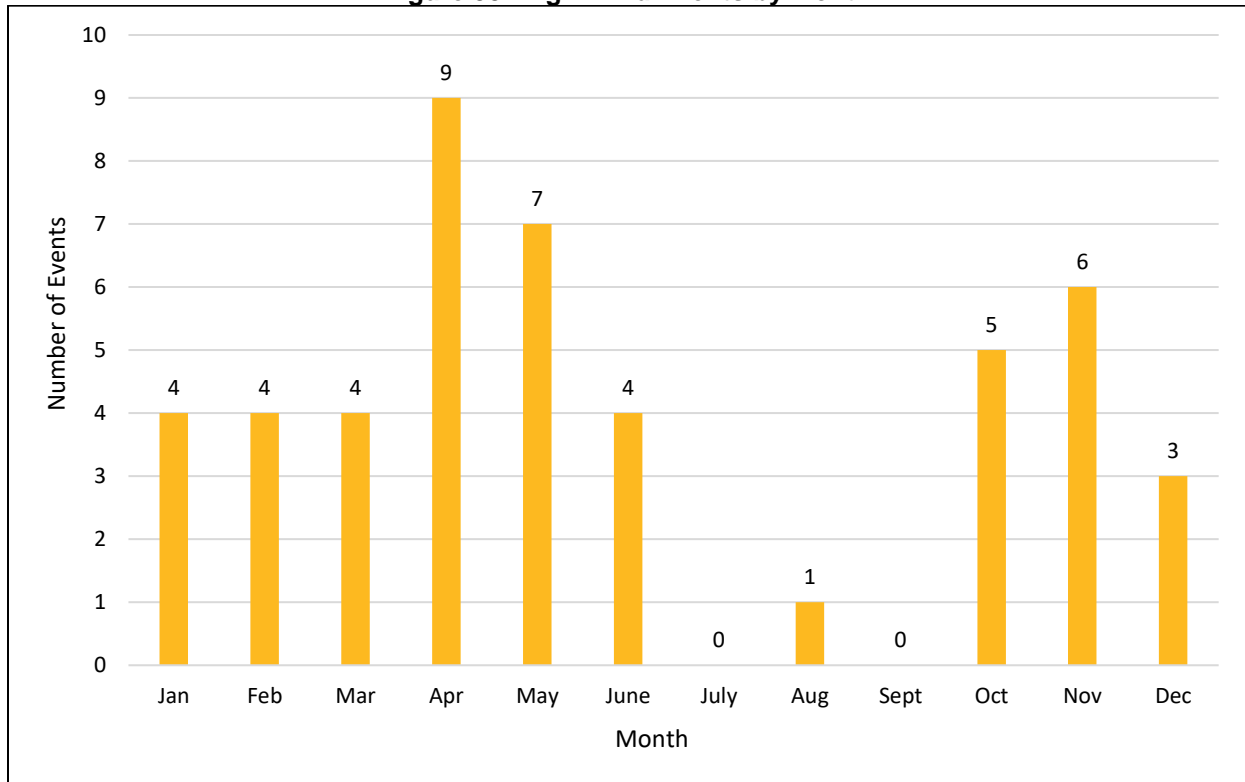
Based on historic record, it is most likely that tornadoes within the planning area will be of EF0 strength. Of the 14 reported tornado events, 10 were EF0/F0, three were EF1, and one was F2.

Historical Occurrences

There were 47 windstorm events that occurred between 1996 and 2022 and 14 tornadic events ranging from a magnitude of EF0 to F2. These events were responsible for \$3,053,740 in property damages and \$4,367,917 in crop damages. No deaths or injuries were reported.

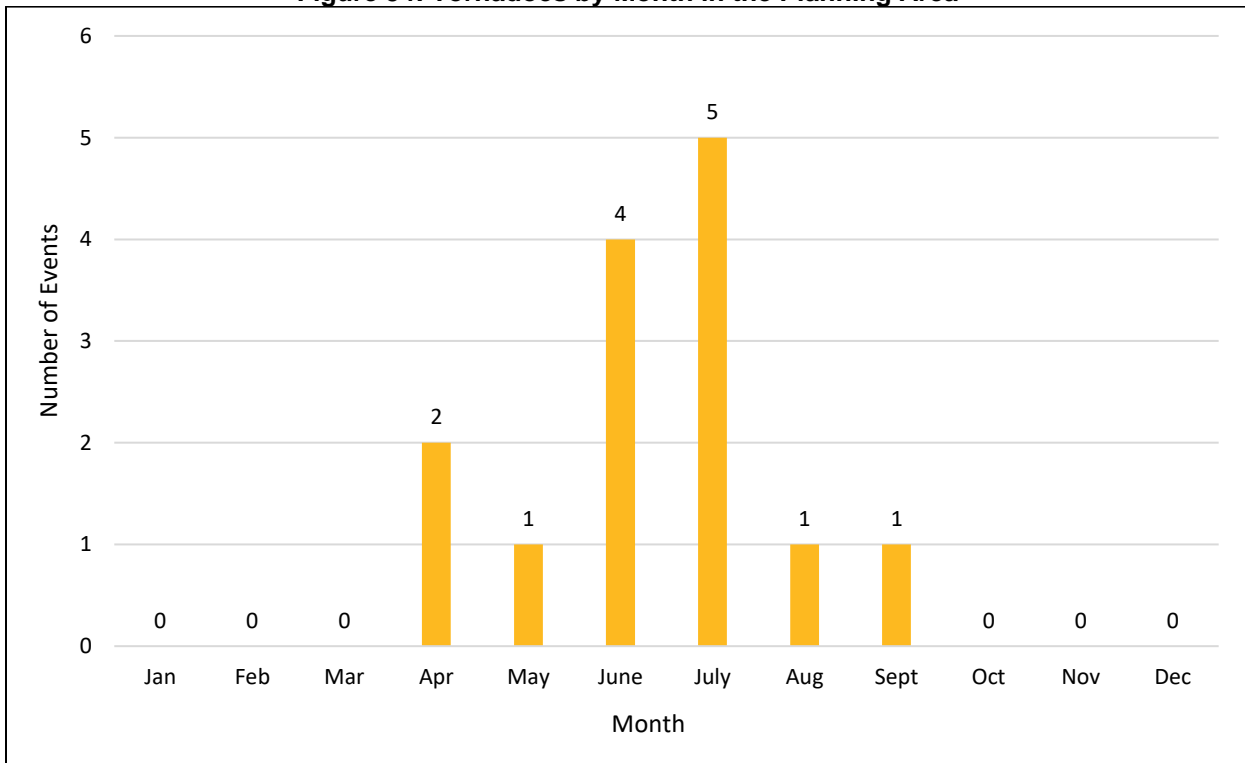
The most damaging tornado occurred in 1998, causing \$1,075,000 in damages. This F2 tornado touched down at various points in the county and tracked through the City of Algona. In 2011, two EF1 tornadoes hit St. Joseph at different times and caused a total of \$360,000 in damages. As seen in the following figures, the majority of windstorm events occur in the spring and fall months, while most tornado events occur in the spring and summer.

Figure 53: High Wind Events by Month



Source: NCEI, 1996-2022

Figure 54: Tornadoes by Month in the Planning Area



Source: NCEI, 1996-2022

Event descriptions from NCEI for the most damaging events are provided below.

- 5/15/1998 Tornado** – As the system mentioned above continued to evolve, a widespread outbreak of severe weather took place over Iowa. Strong upper level dynamics moved over the state over the top of an unstable air mass. Surface dew point temperatures were in the low 70s with actual temperatures in the upper 70s to low 80s. CAPE values rose to between 2500 and 3500 J/kg. The situation became complex during the afternoon as several bands of severe thunderstorms developed. Some areas of the state were affected three times during the day as the storms raced northeast around 60 MPH. The main severe feature with the storms was high wind. There were numerous reports of wind gusts of 60 to 75 MPH. Some were even higher. One of the highest reports came from Atlantic in Cass County. Ninety one MPH winds there threw several cars and a few semi-tractor-trailer trucks off of Interstate 80. High winds in Kossuth County at Algona resulted in roof damage at a nursing home there. Part of the roof was removed by the winds with the damage estimates to the building places at around \$200,000. Another cluster of storms moved into north central Iowa and caused widespread damage in Cerro Gordo and Worth Counties. Both were hit with winds around 70 MPH. There were numerous other reports of damage to farm buildings around the state ranging from corn cribs damaged to barns being destroyed. Damage to trees and power lines was extensive. North of Algona, along U.S. Highway 169, seventy eight power poles were downed by the high winds resulting in a four day closure of the highway. Utility damage around the county was estimated at between \$600,000 and \$800,000, while insurance adjusters estimated damage around the county at \$1.2 million. There were some reports of hail, especially during the first few hours of the event. The largest hail was around golf ball in size. In addition to the wind and hail, there were several tornado touch downs in the state. A tornado touched down in Kossuth County and did over \$1 million in damage. The tornado destroyed 2 houses with another 10 sustaining major damage. Fifteen farmsteads were destroyed as well. Kossuth County was later declared a disaster area. There was also considerable damage to barns and other farm buildings across the county. The outflow from the tornadic storm in Kossuth County pushed an 85 MPH wind gust south into Humboldt County. The high winds blew over 41 railroad cars of the Union Pacific Railroad south of Ottosen. A band of 80 to 90 MPH winds swept across Franklin and Butler Counties. Damage was widespread. There was one report of the wind carrying the family dog over one half mile from home. The dog was later found safe and healthy. Another of the stronger tornadoes included one in Wright County that was on the ground for over 10 miles. It damaged several farm buildings along its path. Several 2 x 4's were driven into the ground north of Clarion by the tornado. Another fairly strong tornado touched down in Crawford County. The rope tornado touched down southeast of Denison. It hit a train about 3 miles east of Denison and derailed nine cars of the Union Pacific freight train. The engineer saw it coming and thought it was so small that nothing would happen. There was also minor damage to 1 house and several outbuildings. There were a few other brief touch downs around the state, however no damage was reported with them. The rapid movement of the storms prevented a lot of the flooding that would have otherwise occurred. Repeat thunderstorms passing over Kossuth County did cause some urban flooding. Damage was relatively minor, however several homes reported minor flooding. As the storms moved across Hancock County, lightning struck a house in the town of Britt. The kitchen sink was blown away from the wall and all of the appliances and the electrical equipment in the house was damaged. Lightning struck very close to another house in Wright County in Belmond. A 75-year old woman received minor injuries as she was struck by lightning as she unplugged her TV near a large window.
- 11/10/1998 Windstorm** – Iowa experienced the worst November storm system since the great storm of 9 and 10 November 1975. During the 9th, low pressure developed over southeast Colorado. The low moved across Kansas during the afternoon and evening of the 9th and deepened to about 990 mb. Warm and moist air was drawn north ahead of the low resulting in widespread across the state. Thunderstorms erupted during the late evening of the 9th, though

no severe weather occurred. During the predawn hours of the 10th, a jet streak rotated around the base of the upper level low pressure area. The jet stream, combined with a tropospheric fold, resulted in explosive deepening of the low. As the low moved through Central Iowa pressures fell below 980 mb, with the low deepening to near 966 mb as it moved over northwest Iowa. The pressure at Spencer and Estherville dipped to 28.54 inches of mercury. This level represents an all-time low for the state of Iowa. At one point, based on CMAN data from several stations in Lake Superior, it appears the low deepened to about 940 mb for a period of 4 to 6 hours during the late afternoon and early evening of the 10th. As the low moved north, high winds swept across the state. Most of the state experienced a period of 12 to 18 hours of sustained winds of 35 to 50 MPH, with frequent gusts of 65 to 75 MPH. The highest official wind gust reported in the area came from La Crosse, WI, where the storm produced wind gusts of 93 MPH. There were unofficial reports of 78 MPH winds east of Tama. Officially, some of the higher winds include 68 MPH at Waterloo, 66 MPH at Mason City, and 67 MPH at Ottumwa. Almost every station in the state reported wind gusts above 60 MPH. Damage was widespread across the state with countless trees and power lines down. Over the northeast third of the state, spotty reports of gas line breakage were received. Officials indicated the reason for this was that due to the prolonged period of high wind. The wind places stress on the buildings, and thus the pipelines, resulting in spotty failures. In addition to the tree and power line damage, several outbuildings were downed by the high winds. There were also several reports of minor structural damage to buildings around the state, ranging from shingles removed to entire roofs. One school in Dallas County reported the roof of the auditorium was removed as the winds got under the roof lining and tore it off. The rocks from the gravel roof were then thrown through several windows in the school. A dormitory roof was damaged in Black Hawk County. Damage was estimated at between \$70,000 and \$90,000. Numerous reports of business windows being blown out were received from around the state. Semi-tractor-trailer rigs were overturned along Iowa's highways as the winds buffeted them. Over the northern third of the state, snow was also a problem as the high winds dropped visibility to near zero at times. The snow was not the main problem; however Interstate 35 was closed from Story City north to the Minnesota border due to high winds and blowing snow. There was one death during the windstorm in Hamilton County at Jewell. A man was repairing a roof and was blown off the roof during the storm. He was rushed to the hospital in critical condition but did not survive. In addition, there were some livestock deaths as well. For example, near Mason City 60 head were lost as they moved into a culvert to get out of the wind and ended up freezing to death once they became wet.

- 6/20/2011 Tornado** - A very intense storm system moved through the central Rockies into the Plains. The upper low looked more like a late winter or spring system, completely closed over northwest Kansas by the evening of the 20th. The atmosphere was very unstable by the late afternoon with lifted indices around -11 and CAPE in the 4000 to 5000 J/kg range. Other parameters were quite high as well with downdraft CAPE of 900 to 1500 J/kg and CAPE in the -10 to -30 C layer of the atmosphere of 500 to 1000 J/kg. Initially the atmosphere was capped with 700 mb temperatures of 11 to 14 C. There was a decent amount of shear available with 45 kts present. Precipitable water values were quite high, approaching 2 inches. A 40 to 50 kt inflow jet was present as well. The LCL level was quite low, between 600 and 1000 meters. A strong line of thunderstorms formed into a quasi-linear convective system. It advanced into Iowa and produced high winds and some hail as it lifted east-northeast. The hail was relatively small, an inch or less in diameter, as the freezing level was well over 15,000 feet resulting in quite a bit of melting of the hail as it fell. The strongest winds were in Humboldt east of Ottosen where 80 MPH winds caused considerable tree and power line damage. High winds downed a 50 foot high 66 X 76 foot barn southeast of Armstrong in Emmet County. Grass, debris, and corn was blown across the highway. The line continued to move northeast. A microburst took place in Black Hawk County, causing considerable damage to a farmstead northwest of La Porte City. Small tornadoes were also reported in central Iowa. One tornado touched down in Kossuth County

northeast of Ottosen. It damaged a house with the walls blown in and out. Part of the roof was blown off the house. A grain auger was launched into the attic of the house. Grain bins and trees were blown into a convergent path north-northwest of the house. There was no damage on the west side of the farmstead. The tornado track was short with wind damage done on farms within a 2 mile radius. A tornado also touched down in Tama County near Cluttier. The damage was very localized with treetops snapped off. Some minor house damage occurred with the gutter blown off into a truck. The roof was taken off of an outbuilding. In the town of Cluttier, one half mile to the southwest, large tree limbs were blown down. Debris and corn were directed to the north, consistent with a small tornadic circulation at the farm site with EF0 damage.

Average Annual Damages

The average damage per event estimate was determined based upon NCEI Storm Events Database since 1996 and number of historical occurrences. This does not include losses from displacement, functional downtime, economic loss, injury, or loss of life. It is estimated that windstorm events can cause an average of \$61,509 per year in property damages and \$188,483 per year in crop damages. Tornadoes have caused an average of \$51,593 per year in property damages and \$1,427 annually in crop damages; however, damages from tornadoes vary greatly depending on the severity or magnitude of each event.

Table 99: Tornado and Windstorm Loss Estimate

Hazard Type	Number of Events ¹	Average Events Per Year	Total Property Loss ¹	Average Annual Property Loss ¹	Total Crop Loss ²	Average Annual Crop Loss ²
Tornado	14	0.5	\$1,393,000	\$51,593	\$32,815	\$1,427
Windstorm	47	1.7	\$1,660,740	\$61,509	\$4,335,102	\$188,483

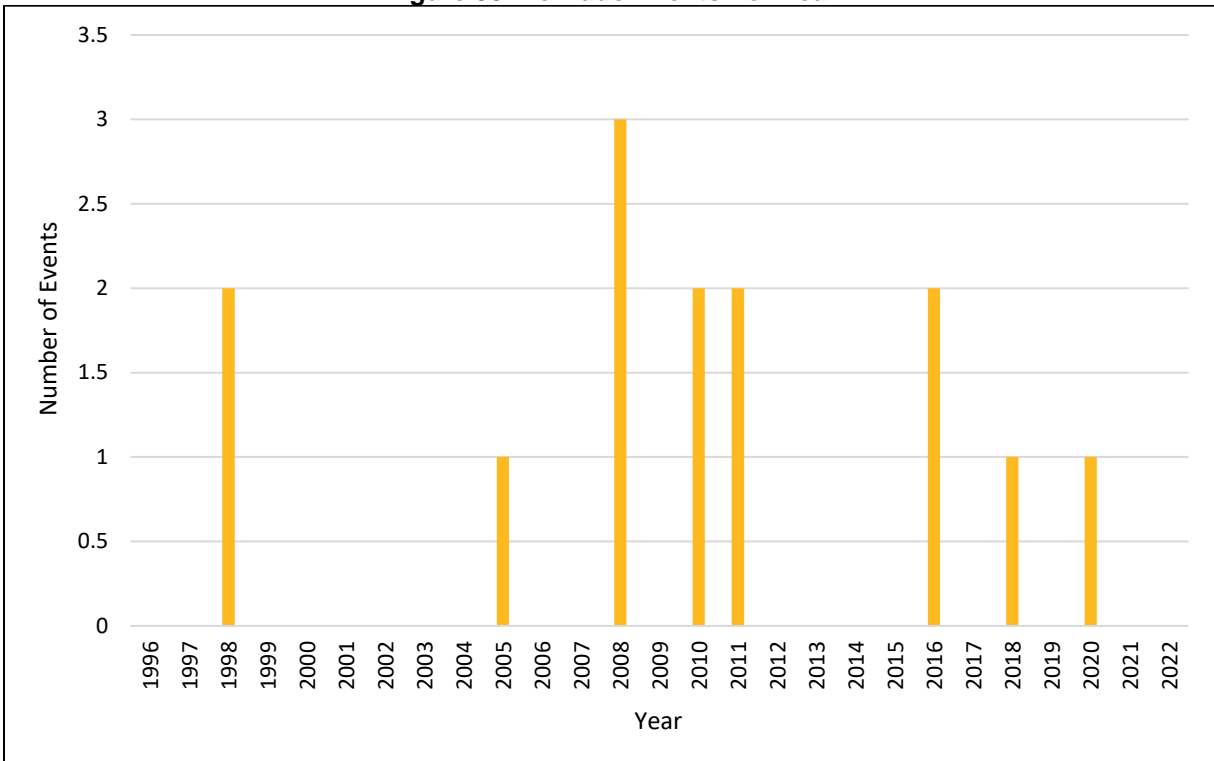
Source: 1 Indicates data is from NCEI (1996 to 2022); 2 Indicates data is from USDA RMA (2000 to 2022)

Probability

Given the historic record of occurrence for windstorms (23 out of 27 years with reported events), for the purposes of this plan, the annual probability of windstorm occurrence is 85 percent. However, windstorms could be more common than presented here but may have simply not been reported in past years.

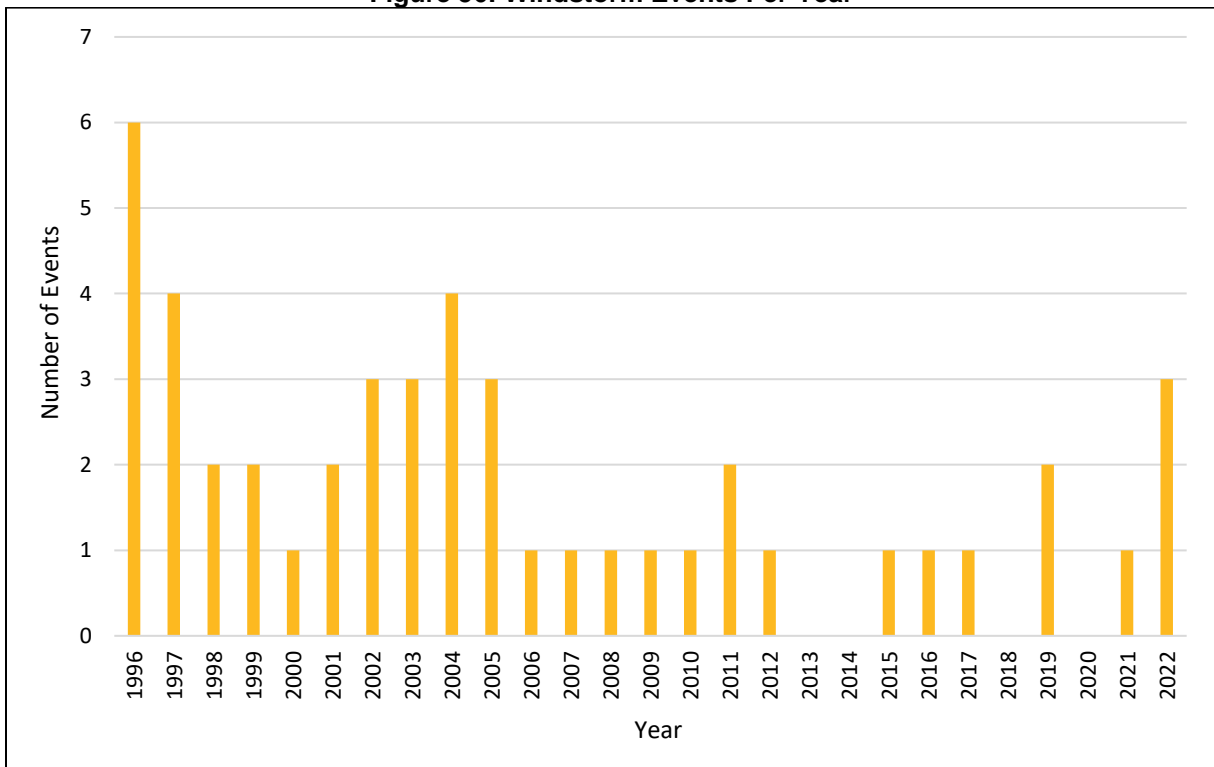
Given the historic record of occurrence for tornado events (8 out of 27 years with reported events), for the purposes of this plan, the annual probability of tornado occurrence is 30 percent. However, it is worth noting that the period of record for data utilized during this analysis is from 1996-2022.

Figure 55: Tornado Events Per Year



Source: NCEI, 1996-2022

Figure 56: Windstorm Events Per Year



Community Top Hazard Status

The following table lists jurisdictions which identified Tornado and Windstorm as a top hazard of concern:

Jurisdictions	
Kossuth County	Lone Rock
Algona	Lu Verne
Bancroft	Swea City
Burt	Titonka
Fenton	Wesley
Lakota	Whittemore
Ledyard	North Kossuth School District

Regional Vulnerabilities

The following table provides information related to regional vulnerabilities; for jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 100: Regional Tornado and Windstorm Vulnerabilities

Sector	Vulnerability
People	<ul style="list-style-type: none"> -Vulnerable populations include those living in mobile homes (especially if they are not anchored properly), nursing homes, and/or schools -People outdoors during events -Citizens without access to shelter below ground or in safe rooms -Elderly with decreased mobility or poor hearing may be higher risk -Lack of multiple ways of receiving weather warnings, especially at night
Economic	<ul style="list-style-type: none"> -Agricultural losses to both crops and livestock -Damages to businesses and prolonged power outages can cause significant impacts to the local economy, especially with EF3 tornadoes or greater
Built Environment	-All building stock is at risk of significant damages
Infrastructure	<ul style="list-style-type: none"> -Downed power lines and power outages -All above ground infrastructure at risk to damages -Impassable roads due to debris blocking roadways
Critical Facilities	-All critical facilities are at risk to damages and power outages
Climate	-Changes in seasonal precipitation and temperature normals can increase frequency and magnitude of severe storm events

Transportation Incident

A transportation accident involves an incident between one or more conveyances on land, sea, or air. Transportation accidents can cause property damage, bodily injury, and death. Accidents are influenced by several factors, including the type of driver, road condition, weather conditions, density of traffic, type of roadway, signage, and signaling.

In the planning area, automobile accidents are likely to be the most common type of incident as there are few rail lines and bodies of water. In addition, the airports in the county are smaller with a low number of takeoffs and landings.

Location

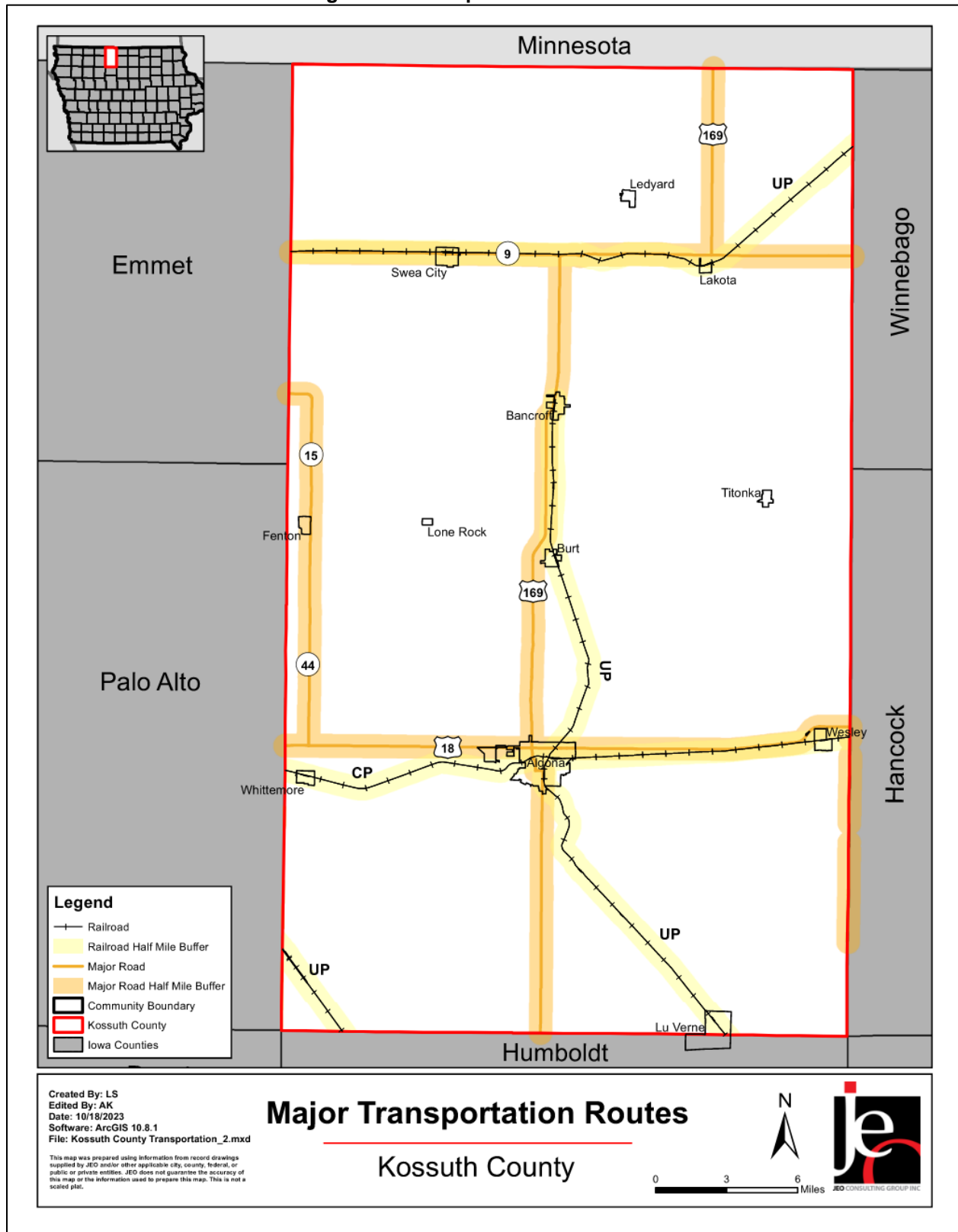
Transportation incidents can occur anywhere along transportation routes in the planning area but are most likely to occur along major highways due to increased speeds and the higher number of vehicles. There is one public-use airport in Kossuth County: the Algona Municipal Airport.

Figure 57 shows the location of the major transportation routes in the planning area.

Extent

The extent of automobile, rail, and air incidents is usually localized, however catastrophic events can occur and may require assistance from outside jurisdictions. Transportation incidents can also cause hazard materials releases, which can further increase damages and risk of injury.

Figure 57: Transportation Corridors

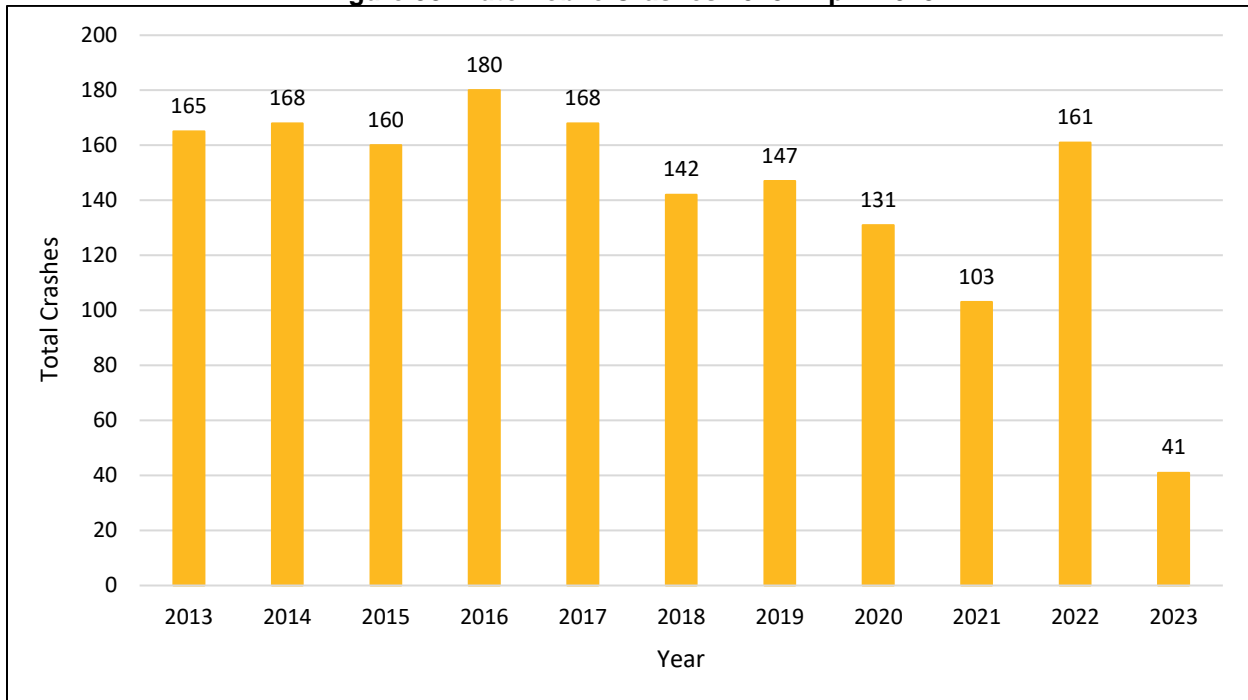


Historical Occurrences

Automobile

The Iowa Department of Transportation (IDOT) maintains records at the county level for certain automobile related accidents. The following figure shows total crashes from 2013 to April 2023. These events resulted in a total of 1,566 crashes, 414 injuries, and 18 fatalities.

Figure 58: Automobile Crashes 2013 - April 2023



Source: IDOT¹³³

Highway Rail

The Federal Railroad Administration (FRA) keeps data on all highway rail accidents since 1975. Table 101 shows the number of highway rail accidents that have occurred in the county from 1975 to 2022. 16 injuries and five deaths resulted from these events.

Table 101: Historical Highway Rail Incidents

Number of Incidents	Injuries	Fatalities
36	16	5

Source: Federal Railroad Administration, 1975-2022¹³⁴

¹³³ Iowa Department of Transportation. 2023. "ICAT-Iowa Crash Analysis Tool." <https://icat.iowadot.gov/>

¹³⁴ Federal Railroad Administration. 2023. "Highway Rail Accidents". https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/on_the_fly_download.aspx.

Aviation

From 1962 through April 2023, there were 19 aviation accidents in the planning area, as reported by the National Transportation Safety Board (NTSB) database. The events resulted in five injuries and five fatalities.

Table 102: Historical Aviation Incidents with Injuries or Fatalities

Date	Injuries	Fatalities	Nearest Community
8/22/1971	0	1	Whittemore
12/19/1982	0	3	Bancroft
8/13/1983	1	0	Whittemore
8/17/1984	0	1	Algona
8/3/1987	1	0	Swea City
8/8/1999	0	1	Titonka
12/20/2005	2	0	Algona
10/24/2019	1	0	Swea City

Source: National Transportation Safety Board, 1962-April 2023¹³⁵

Average Annual Damages

The average damage per event estimate was determined for each incident type based upon records from IDOT, FRA, NTSB, and number of historical occurrences. Only transportation events from FRA included damage totals. This does not include losses from functional downtime, economic loss, injury, or loss of life. Transportation incidents have caused an average of \$1,560,618 per year in property damages to the planning area. RMA data is not available for transportation incidents, but crop damage would be expected to be minimal.

Table 103: Transportation Incidents Loss Estimate

Hazard Type	Number of Events	Average Events per Year	Total Property Loss	Average Annual Property Loss
Auto ¹	1,566	142	\$17,087,284	\$1,553,389
Aviation ²	24	0.39	N/A	N/A
Highway Rail ³	36	0.75	\$346,980	\$7,229
Total	1,621	144	\$17,434,264	\$1,560,618

Source: 1 IDOT, 2013-April 2023; 2 NTSB 1962-April 2023; 3 FRA 1975- 2022

Probability

The probability of transportation incidents is based on the historic record provided by the IDOT, FRA, and NTSB. Based on the historic record, there is a 100% annual probability of auto incidents, a 32% annual probability (20 out of 62 years with reported events) for aviation incidents, and a 50% probability (124 out of 48 years) of highway rail incidents occurring in the planning area each year.

¹³⁵ National Transportation Safety Board. 1962-April 2023. "Aviation Accident Database & Synopses".
<https://www.nts.gov/ layouts/ntsb.aviation/index.aspx>.

Community Top Hazard Status

North Kossuth Community School District is the only jurisdiction which identified Transportation Incident as a top hazard of concern.

Regional Vulnerabilities

The following table provides information related to regional vulnerabilities; for jurisdictional-specific vulnerabilities, refer to *Section Seven: Community Profiles*.

Table 104: Regional Transportation Incidents Vulnerabilities

Sector	Vulnerability
People	-Injuries and fatalities to drivers and passengers -Injuries and fatalities to those nearby if hit
Economic	-Prolonged road closures and detours for clean-up
Built Environment	-Potential damage to nearby buildings
Infrastructure	-Damage to roadways, utility poles, and other infrastructure if struck by a vehicle
Critical Facilities	-Roadway closures -Damage to facilities if located near transportation routes
Climate	-None

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Section Five: Mitigation Strategy

Introduction

The primary focus of the mitigation strategy is to identify action items to reduce the effects of hazards on existing infrastructure and property based on the established goals. These actions should consider the most cost effective and technically feasible manner to address risk.

The establishment of goals took place during the kick-off meeting with the Hazard Mitigation Planning Team. Meeting participants reviewed the goals from the 2019 HMP and discussed recommended additions and modifications. The intent of each goal is to develop strategies to account for risks associated with hazards and identify ways to reduce or eliminate those risks.

The Hazard Mitigation Planning Team decided to keep the same four goals from the 2019 HMP, but also add a fifth: “Develop or improve planning, ordinances, and building codes to increase capabilities, procedures, and resiliency across Kossuth County”. The goals were then shared with all planning team members at the Round 1 public meetings.

Summary of Changes

The development of the mitigation strategy for this plan update includes the addition of new mitigation and strategic actions, updated status or removal of past actions, and revisions to the mitigation and strategic action selection process or descriptions of actions for consistency across the planning area.

Requirement §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these tools.

Requirement §201.6(c)(3)(i): The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Requirement §201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. The jurisdiction’s participation in the National Flood Insurance Program and continued compliance with NFIP requirements, as appropriate, must also be addressed.

Requirement: §201.6(c)(3)(iii): The mitigation strategy section shall include an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

Requirement §201.6(c)(3)(iv): For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Goals

Below is the final list of goals as determined for this plan update. These goals provide direction to guide participants in reducing future hazard related losses.

Goal 1: Minimize the vulnerability of the people and their property in Kossuth County to the impacts of hazards.

Goal 2: Protect critical facilities, infrastructure and other community assets from the impacts of hazards.

Goal 3: Improve education and awareness regarding hazards and risk in Kossuth County.

Goal 4: Strengthen communication regarding hazard mitigation among agencies and between agencies and the public.

Goal 5: Develop or improve planning, ordinances, and building codes to increase capabilities, procedures, and resiliency across Kossuth County.

Selected Mitigation and Strategic Actions

Local community representatives evaluated and prioritized mitigation and strategic actions at the local level. These actions included: the mitigation and strategic actions identified per jurisdiction in the previous plan; additional mitigation and strategic actions discussed during the planning process; and recommendations from JEO for additional mitigation and strategic actions based on risk probability and vulnerability at the local level.

The Hazard Mitigation Planning Team provided each participant a link to the FEMA Mitigation Ideas document as a list of mitigation actions to be used as a starting point. Participants were also encouraged to think of actions that may need FEMA grant assistance and to review their hazard prioritization for potential mitigation actions. These suggestions helped participants determine which actions would best assist their respective jurisdiction in alleviating damages in the event of a disaster. The listed priority rating does not indicate which actions will be implemented first but serves as a guide in determining the order in which each action should be implemented. Participants were informed of the STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, Environmental) feasibility review process and were encouraged to use it when determining project priorities.

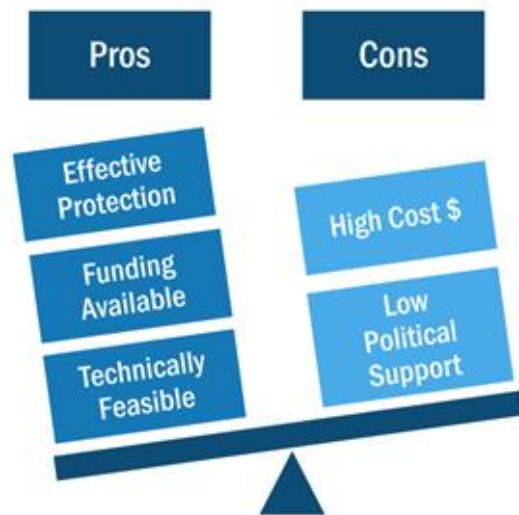
These prioritized projects are the core of a hazard mitigation plan. The local planning teams were instructed that each action must directly relate to the goals of the plan and the hazards of top concern for their jurisdiction. Actions must be specific activities that are concise and can be implemented individually. Mitigation and strategic actions were evaluated based on referencing the community's risk assessment and capability assessment. Jurisdictions were encouraged to choose mitigation and strategic actions that were realistic and relevant to the concerns identified.

The local planning team members prioritized the mitigation actions according to criterion most applicable to their jurisdiction. Note that the listed priority rating does not indicate which actions may be implemented first – as some low priority actions may be easily accomplished while high priority actions may require a more time-consuming implementation process. Not all mitigation actions identified by a community can be a high priority project due to a lack of funds, time, or local capacity. Representatives were tasked with considering the pros and cons of the following

amongst the local planning team when determining whether to pursue a mitigation action and its priority level:

- Does the action address a local concern? To what extent does it mitigate local risk? Does the action address multiple hazard concerns or broadly improve resiliency?
- How much might the action cost? Are the costs reasonable compared to probable benefits? Are there local funds to accomplish the project or is outside funding needed?
- Does the lead agency or responsible party have the time, expertise, or capacity to implement the project?
- Does the project or action have local and/or political support?
- Is the project prohibitive in some way? For example: financially prohibitive; lacking legal authority to implement; strong local opposition; etc.

Generally, high priority actions either address a major concern for the jurisdiction, have few to no challenges in implementation, and/or garner large support from the public and administration. Low priority actions either address a minor concern for the jurisdiction, have many challenges in implementation, and/or may not have support from the public or administration at this time. Medium priority actions may only have one or two of the items listed above. A mitigation action's priority may change very quickly as circumstances change. The local planning team members qualitatively established all mitigation action priority levels. Future updates to the plan should consider a quantitative approach to feasibility, benefit, and support when prioritizing actions.



It is important to note that not all the mitigation and strategic actions identified by a jurisdiction may ultimately be implemented due to limited capabilities; availability of existing information; prohibitive costs or funding opportunities and limitations; low benefit-cost ratio; administrative capabilities of communities; or other concerns. These factors may not be identified during this planning process. The cost estimates, priority rating, potential funding, and identified agencies are used to give communities an idea of what actions may be most feasible over the next five years. This information will serve as a guide for the participants to assist in hazard mitigation for the future. Also, some jurisdictions may identify and pursue additional mitigation and strategic actions not identified in this HMP.

Mitigation and strategic actions identified by participants of the Kossuth County HMP are found in the Mitigation and Strategic Actions Project Matrix below. The information listed in the following tables is a compilation of new and ongoing mitigation and strategic actions identified by jurisdiction. Completed and removed actions can be found in respective community profiles. Each action includes the following information in the respective community profile.

- Action: General title of the action item.
- Description: Brief summary of what the action item(s) will accomplish.
- Hazard(s) Addressed: Which hazard the action aims to address.
- Estimated Cost: General cost estimate for implementing the action for the appropriate jurisdiction.

- **Funding:** A list of any potential local funding mechanisms to fund the action.
- **Timeline:** General timeline as established by planning participants.
- **Priority:** General description of the importance and workability in which an action may be implemented (high/medium/low); priority may vary between each community, mostly dependent on funding capabilities and the size of the local tax base.
- **Lead agency:** Listing of agencies or departments which may lead or oversee the implementation of the action item.
- **Status:** A description of what has been done, if anything, to implement the action item.

Mitigation and Strategic Actions Project Matrix

During public meetings, each participant was asked to review mitigation and strategic projects listed in the 2019 HMP and identify new potential actions, if needed, to reduce the effects of the hazards profiled for their area. Selected projects varied per jurisdiction depending upon the significance of each hazard present. The information listed in the following tables is a compilation of new and ongoing mitigation and strategic actions identified by jurisdiction. Completed and removed actions can be found in respective community profiles.

Table 105: Mitigation and Strategic Actions Selected by Each Jurisdiction (1 of 2)

Actions	Goal	Kossuth County	City of Algona	City of Bancroft	City of Burt	City of Fenton	City of Lakota	City of Ledyard	City of Lone Rock	City of Lu Verne	City of Swea City	City of Titonka	City of Wesley	City of Whittemore
Alert/Warning Sirens	1													
Acquire PPE	1												X	
Backup and Emergency Generators	1, 2	X	X	X	X	X	X	X	X	X	X	X	X	X
Bury Overhead Powerlines	1, 2		X		X									
Continue NFIP Participation	1, 2, 3		X							X				
Continuity of Operations Plan	1, 2, 3, 4, 5	X	X	X	X					X		X		X
Drought Management Plan	1, 2, 3, 5	X												
Emergency Management Plans	1, 2, 3, 4, 5		X	X	X	X	X		X	X	X	X	X	X
Emergency Response Training	1, 3	X		X	X	X	X		X	X		X		X
Enhance Security Measures	1, 2	X		X	X	X	X			X		X		X
Fire Department Staff/Resources	1, 2,							X						
Flood-prone Property Acquisition	1, 2			X						X				
HAZMAT Training/Awareness	1, 2, 3										X			
Heating/Cooling Centers	1, 2		X	X	X	X	X							
Lift Station	1, 2				X									
Mass Shelter Location	1						X							
Natural Floodplain Improvements	1, 2		X				X							
Promote Resiliency Through Codes and Regulations	1, 5	X		X							X		X	
Public Awareness/Education	1, 3, 4	X	X	X	X	X	X	X	X	X	X	X	X	X
Public Safety Equipment/Vehicles	1, 2		X											
Remove/Treat Hazardous Trees	1, 2		X			X								
Snow Removal Equipment	1, 2				X	X								

Actions	Goal	Kossuth County	City of Algona	City of Bancroft	City of Burt	City of Fenton	City of Lakota	City of Ledyard	City of Lone Rock	City of Lu Verne	City of Swea City	City of Titonka	City of Wesley	City of Whittemore
Storm Shelters / Safe Rooms	1	X	X	X	X				X	X				X
Stormwater System and Drainage Improvements	1, 2	X			X	X	X						X	X
Wastewater System Improvements	1, 2				X		X					X	X	
Water Storage	1, 2						X							
Water Conservation Plan	1, 2, 3, 4, 5				X									
Water System Improvements	1, 2									X				

Table 106: Mitigation and Strategic Actions Selected by Each Jurisdiction (2 of 2)

Actions	Goal	Algona Community School District	North Kossuth Community School District
Additional Bus Driver Training	1, 2, 3		X
Backup and Emergency Generators	1, 2	X	X
Drought Awareness/Education	1, 3, 4		X
New Boiler	1, 2		X
Public Awareness/Education	1, 3, 4	X	X

Section Six:

Plan Implementation and Maintenance

Monitoring, Evaluating, and Updating the Plan

Each participating jurisdiction in the Kossuth County HMP is responsible for monitoring, evaluating, and updating the plan during its five-year lifespan. Hazard mitigation and strategic projects will be prioritized by each participant's governing body with support and suggestions from the public and business owners. Unless otherwise specified by each participant's local planning team, the governing body will be responsible for implementing the recommended projects. The responsible party for the various implementation actions will report on the status of all projects and include which implementation processes worked well, any difficulties encountered, how coordination efforts are proceeding, and which strategies could be revised.

As projects or actions are implemented, a detailed timeline of how that project was completed should be written and attached to the plan in a format selected by the governing body. Information that will be included will address project timelines, agencies involved, area(s) benefited, total cost (if complete), etc. At the discretion of each governing body, local planning team members, and other identified relevant stakeholders should review the original draft of the mitigation plan and recommend applicable changes.

Plan review and updates should occur regularly, with a complete update occurring every five years at a minimum. At the discretion of each governing body, updates may be incorporated more frequently, especially in the event of a major hazard or as additional mitigation needs are identified. Local planning team members should engage with the public, other elected officials, and multiple departments as they review and update the plan. The persons overseeing the evaluation process will review the goals of the previous plan and evaluate them to determine whether they are still pertinent and current. Among other questions, they may want to consider the following:

- Do the goals address current and expected conditions?
- If any of the recommended projects have been completed, did they have the desired impact on the goal for which they were identified? If not, what was the reason it was not

Requirement §201.6(c)(4)(i): The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

Requirement §201.6(c)(4)(ii): The plan shall include a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

Requirement §201.6(c)(4)(iii): The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

Requirement §201.6(d)(3): A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within five years to continue to be eligible for mitigation project grant funding.

successful (lack of funds/resources, lack of political/popular support, underestimation of the amount of time needed, etc.)?

- Have either the nature, magnitude, and/or type of risks changed?
- Are there implementation problems?
- Are current resources appropriate to implement the plan?
- Were the outcomes as expected?
- Did the plan partners participate as originally planned?
- Are there other agencies which should be included in the revision process?

Worksheets in *Appendix C* may also be used to assist with plan review and updates.

In addition, the governing body will be responsible for ensuring that the HMP's goals are incorporated into applicable revisions of other planning mechanisms per jurisdiction. These plans may include: Comprehensive Plans, Capital Improvement Plans, Zoning Ordinances, Floodplain Ordinances, Building Codes, and/or Watershed Management Plans. Future updates of this HMP will review and update discussions of plan integration per community as appropriate.

Continued Public Involvement

To ensure continued plan support and input from the public and business owners, public involvement should remain a top priority for each participating jurisdiction. Notices for public meetings involving discussion of an action on mitigation updates should be published and posted in the following locations:

- Public spaces around the jurisdiction
- City/Village Hall
- Websites
- Social media
- Local radio stations
- Local newspapers
- Regionally distributed newsletters

Any amendments to the HMP as determined through public involvement or community actions should be shared with HSEMD.

Integrating Other Capabilities

There are a number of state and federal agencies with capabilities that can be leveraged during HMP updates or mitigation and strategic action implementation. A description of some regional resources is provided below.

Iowa Department of Homeland Security and Emergency Management

HSEMD is the coordinating body for homeland security and emergency management activities across the state of Iowa. HSEMD is responsible for emergency management, which is usually divided into five phases: preparedness, response, recovery, prevention, and mitigation.

The governor appoints the Iowa homeland security advisor and the director of the Iowa Department of Homeland Security and Emergency Management (HSEMD). The HSEMD director serves as the state administrative agent for grants administered by the federal government: such

as HMGP, FMA and BRIC. HSEMD is responsible for developing the state hazard mitigation plan, which serves as a comprehensive set of guidelines for hazard mitigation across the state. The state hazard mitigation officer (SHMO) is responsible for the coordination of plan updates and maintenance. The SHMO also serves as the lead coordinator for the State Hazard Mitigation Team (SHMT), which provides input on the state hazard mitigation planning process.

For more information regarding HSEMD responsibilities as well as their ongoing projects and programs, please go to <https://homelandsecurity.iowa.gov/>.

Iowa Department of Natural Resources

The IDNR is committed to providing Iowa's citizens and leaders with the data and analyses they need to make appropriate natural resource decisions for the benefit of all Iowans both now and in the future. This state agency is responsible in the areas of forest and prairie management, fish and wildlife programs, fire prevention, surface water and groundwater, floodplain management, dam safety, natural resource planning, animal feeding operations, permitting, solid waste management, household hazardous materials and many other programs and services. IDNR also coordinates with the US Forest Service, State and private forest agencies, the Big Rivers Forest Fire Management Compact to support natural resource managers and fire departments in fire prevention efforts.

For more information regarding IDNR's responsibilities as well as their ongoing projects, please go to <https://www.iowadnr.gov/>.

Silver Jackets Program

The Silver Jackets program is also worth mentioning for their extensive role in providing a formal and consistent strategy for an interagency approach to planning and implementing measures to reduce the risks associated with flooding and other natural hazards. It brings together multiple state, federal, and sometimes tribal and local agencies to learn from one another and apply their knowledge to reduce risk. The State Hazard Mitigation Team and the Iowa Flood Risk Management Team, also known as the Silver Jackets, coordinate efforts related to the review and update of the Iowa Hazard Mitigation Plan. The State Hazard Mitigation Team has largely delegated flood mitigation interagency coordination to the Silver Jackets.

At this time the Silver Jackets do not have any projects taking place in the Kossuth County planning area.

Unforeseen Opportunities

If new, innovative mitigation strategies arise that could impact the planning area or elements of this plan, which are determined to be of importance, a plan amendment may be proposed. If a new mitigation action is identified in between the five-year updates, it is recommended to share this amendment with Kossuth County Emergency Management, as the plan sponsor, and with HSEMD, who will file it with FEMA. Re-adoption of the plan would not be needed until the normal five-year update. Such amendments should include all applicable information for each proposed action, including description of changes, identified funding, responsible agencies, etc. For an amendment template, see Appendix C.

Incorporation into Existing Planning Mechanisms

The Hazard Mitigation Planning Team utilized a variety of plan integration tools to help communities determine how their existing planning mechanisms were related to the Hazard Mitigation Plan. Utilizing FEMA's *Integrating Hazard Mitigation Into the Local Comprehensive Plan*¹³⁶ guidance, as well as FEMA's *2015 Plan Integration*¹³⁷ guide, each jurisdiction engaged in a plan integration discussion. This discussion was facilitated by a Plan Integration Worksheet, created by the Hazard Mitigation Planning Team. This document offered an easy way for participants to notify the Hazard Mitigation Planning Team of existing planning mechanisms, and if they interface with the HMP.

Each jurisdiction referenced all relevant existing planning mechanisms and provided information on how these did or did not address hazards and vulnerability. Summaries of plan integration are found in each participant's *Community Profile*. For jurisdictions that lack existing planning mechanisms, especially smaller communities, the HMP may be used as a guide for future activity and development in the jurisdiction.

¹³⁶ Federal Emergency Management Agency. July 2020. "FEMA Region X Integrating the Local Natural Hazard Mitigation Plan into a Community's Comprehensive Plan." <https://www.fema.gov/sites/default/files/2020-07/integrating-hazard-mitigation-local-plan.pdf>

¹³⁷ Federal Emergency Management Agency. July 2015. "Plan Integration: Linking Local Planning Efforts." https://www.fema.gov/sites/default/files/2020-06/fema-plan-integration_7-1-2015.pdf

Section Seven: Community Profiles

Purpose of Community Profiles

Community Profiles contain information specific to jurisdictions participating in the Kossuth County planning effort. Community Profiles were developed with the intention of highlighting each jurisdiction's unique characteristics that affect its risk to hazards. Community Profiles may serve as a reference of identified vulnerabilities and mitigation and strategic actions for a jurisdiction as they implement the mitigation plan. Information from individual jurisdictions was collected at public and one-on-one meetings and used to establish the plan. Community Profiles include the following elements:

- Local Planning Team
- Location and Geography
- Demographics
- Employment and Economics
- Housing
- Governance
- Capability Assessment
- Plan Integration
- Future Development Trends
- Community Lifelines
- Structural Inventory and Valuation
- Historical Occurrences
- Hazard Prioritization
- Mitigation Strategy
- Plan Maintenance

In addition, maps specific to each jurisdiction are included, such as jurisdiction identified critical facilities, flood-prone areas, and a future land use map (when available).

The hazard prioritization information, as provided by individual participants, varies due in large part to the extent of the geographical area, the jurisdiction's designated representatives (who were responsible for completing meeting worksheets), identification of hazards, and occurrence and risk of each hazard type.

The overall risk assessment for the identified hazard types represents the presence and vulnerability to each hazard type throughout the entire planning area. A discussion of certain hazards selected for each Community Profile was prioritized by the local planning team based on the identification of hazards of greatest concern, hazard history, and the jurisdiction's capabilities. The hazards not examined in depth for each community profile can be found in *Section Four: Risk Assessment*.

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Community Profile

City of Algona

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table ALG.1: Algona Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Rick Murphy	Mayor	City of Algona	Round 1 & 2
Jacob Tjaden	City Administrator	City of Algona	Round 2

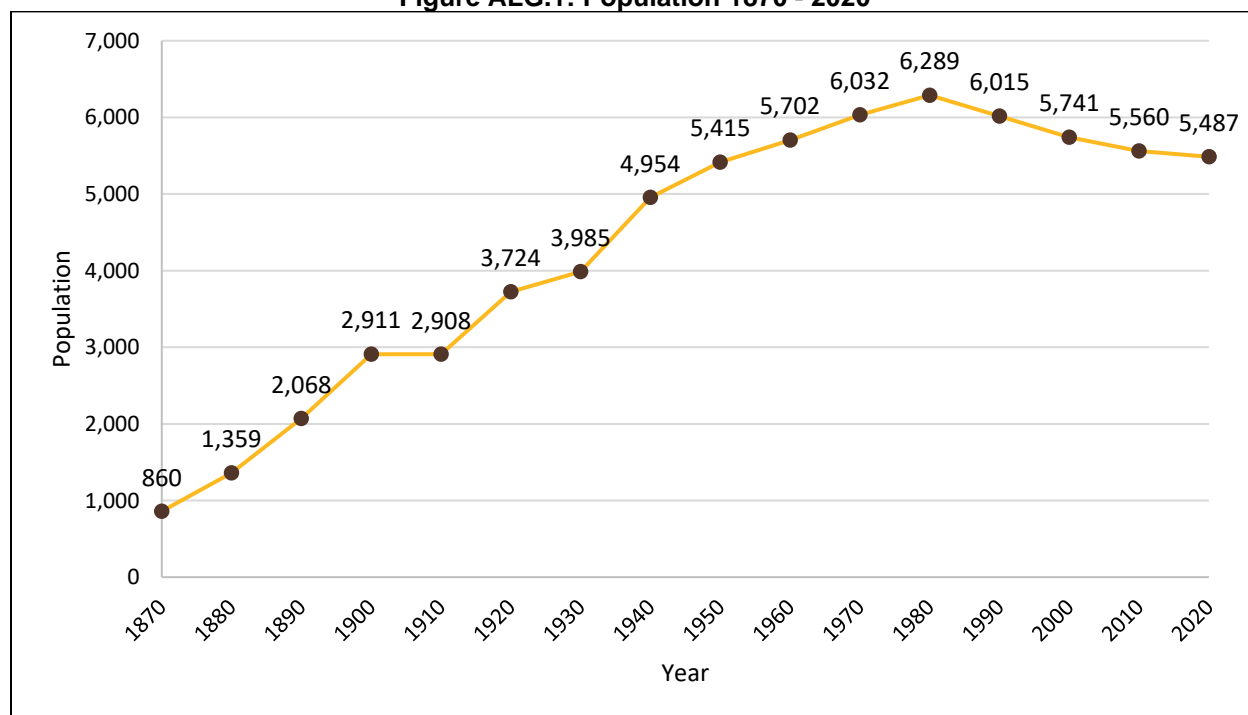
Location and Geography

The City of Algona is located in south central Kossuth County and covers an area of 4.51 square miles. The main waterway in the area is East Fork Des Moines River, which wraps around the western edge of the city.

Demographics

Algona's estimated population in 2021 was 5,407. The following figure displays the historical population trend from 1870 to 2020. This figure indicates that the population of Algona steadily increased from 1870 to 1980 but has since slowly declined. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which can make implementation of mitigation projects fiscally challenging. Algona's population accounted for 36.5% of Kossuth County's population in 2021.¹

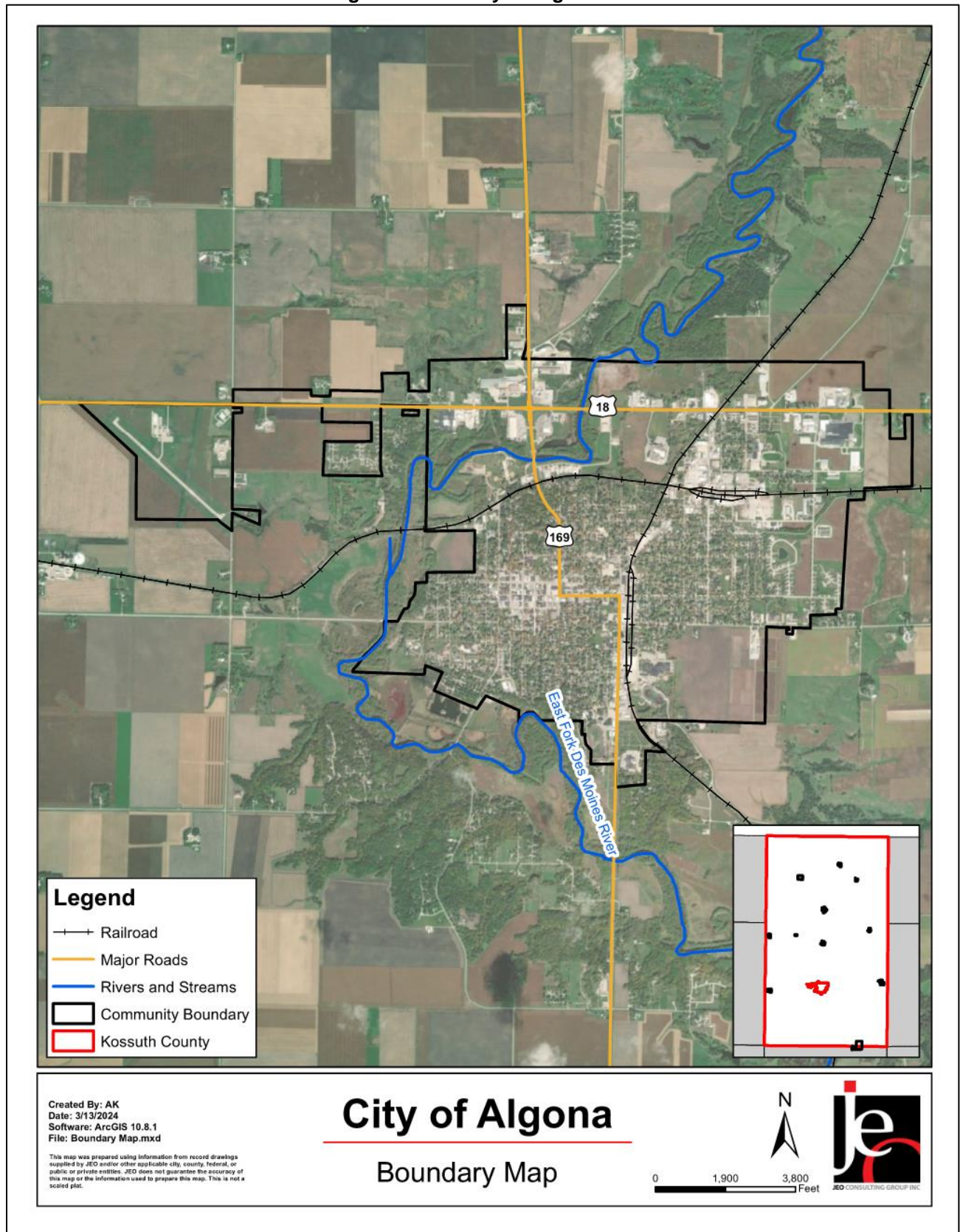
Figure ALG.1: Population 1870 - 2020



Source: U.S. Census Bureau

¹ United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Figure ALG.2: City of Algona

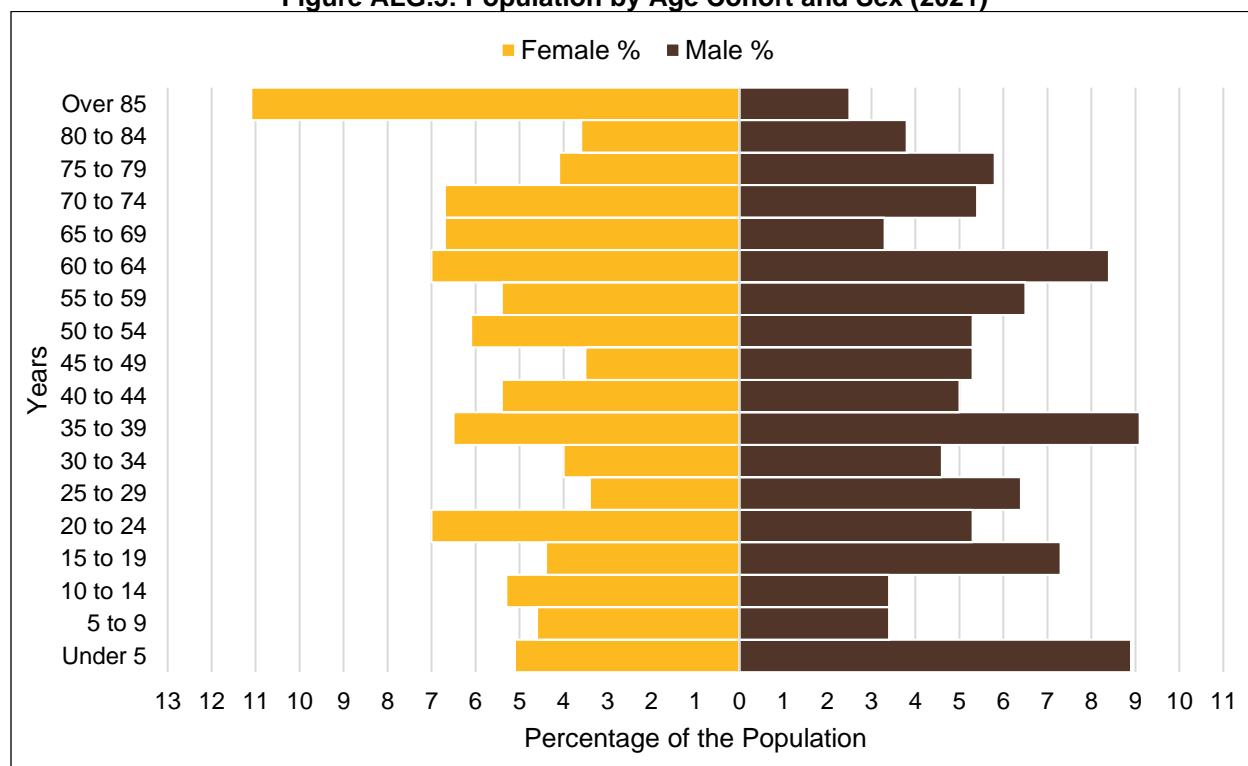


Section Seven: City of Algona Community Profile

The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Algona's population:

- **4.9% is non-white.** Since 2010, Algona became more racially diverse. In 2010, 2.8% of the Algona's population was non-white. By 2021, 4.9% was non-white.²
- **Median age of 46.6.** The median age of Algona was 46.6 years old in 2021. The population became younger since 2010, when the median age was 47.2.³

Figure ALG.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau⁴

The figure above shows Algona's population percentage broken down by sex and five-year age groups. Algona's population is similarly spread throughout most age groups. This indicates that the population is likely to remain stable in the future.

2 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

3 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

4 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Algona's population has:

- **11% of people living below the poverty line.** The poverty rate (11%) in the City of Algona was the same as the state's poverty rate (11%) in 2021.⁵
- **\$49,313 median household income.** Algona's median household income in 2021 (\$49,313) was \$16,116 lower than the state (\$65,429).⁶
- **4.7% unemployment rate.** In 2021 Algona had a higher unemployment rate (4.7%) when compared to the state (3.9%).⁷
- **11.1% of workers commuted 30 minutes or more to work.** Fewer workers in Algona commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (11.1% compared to 77.1%).⁸

Major Employers

Major employers in Algona include Snap-On, Hormel, Farmers Mutual Insurance, Algona Community Schools, Kossuth County Regional Hospital, HyVee, Bishop Garrigan Schools, and the Good Samaritan Society. According to the local planning team, a large number of residents commute to other cities for work, such as Mason City and Fort Dodge.

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Algona's housing stock has:

- **51% of housing built prior to 1970.** Algona has a larger share of housing built prior to 1970 than the state (51% compared to 49.9%).⁹
- **7.4% of housing units vacant.** Algona has a lower vacancy rate (7.4%) compared to the rest of the state (9.3%).¹⁰

5 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

6 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

7 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

8 United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

9 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

10 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

Section Seven: City of Algona Community Profile

- **0% mobile and manufactured housing.** The City of Algona has a smaller share of mobile and manufactured housing (0%) compared to the state (3.5%).¹¹
- **36.1% renter-occupied.** The rental rate of Algona was 36.1% in 2021. This is higher than the state's rate of 28.4%.¹²

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **75.1% of households have a broadband internet subscription.** Algona has a smaller share of households with broadband (75.1%) compared to the state (84.9%).¹³

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Algona has a mayor, a five-member city council, and the following offices.

- City Administrator
- Clerk/Treasurer
- Deputy City Administrator
- Chief of Police
- Fire Chief
- Wastewater Plant Superintendent
- Water Superintendent
- Street Superintendent
- Airport Manager
- Building Official
- Electric Department Superintendent
- Library Director
- Parks Superintendent
- Zoning Administrator
- Dispatch/Communications Director
- General Manager of Algona Municipal Utilities

11 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

12 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

13 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

Capability Assessment

The planning team assessed the City of Algona's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Table ALG.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Economic Development Plan	No
	Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Yes
	Source Water Protection Plan	Yes
	Water System Emergency Response Plan	Yes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	No
	Chief Building Official	Yes
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other: Urban Forest Utility	Yes
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	No
	Gas/Electric Service Fees	Yes
	Storm Water Service Fees	Yes
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes

Section Seven: City of Algona Community Profile

Survey Components/Subcomponents		Yes/No
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

National Flood Insurance Program (NFIP)

Algona is a member of the NFIP, having joined on 6/1/1983. The city's Zoning Administrator oversees the commitments and requirements of the NFIP, including enforcement of the local floodplain management regulations. The initial FIRM for the city was delineated on 6/1/1983, and the current effective map date is 3/20/2018, which has been adopted and incorporated into the local floodplain management regulations. As of September 30, 2022, there are four NFIP policies in-force for the city totaling \$1,808,800. Algona does not currently have any repetitive loss or severe repetitive loss structures. The city requires permits for development in the floodplain and addresses floodplain management violations through a cease work order. The city works with the state when needed. The local planning team has said that Algona will continue to pursue good standing and involvement with the NFIP in the future.

After a flood event, the community implements substantial improvement and substantial damage provisions as outlined in FEMA's Substantial Improvement/Substantial Damage Desk Reference, which can be found here:

https://www.fema.gov/sites/default/files/documents/fema_nfip_substantial-improvement-substantial-damage-desk-reference.pdf.

Depending on the extent of flood impacts and number of substantial damage determinations needed, state resources may be sought, or a contractor could be hired to assist.

Table ALG.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Moderate
Staff/expertise to implement projects	Moderate
Community support to implement projects	Moderate
Time to devote to hazard mitigation	Moderate
Ability to expand and improve identified capabilities to achieve mitigation	Moderate

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Algona, is Relatively Low (56.35). The average for the State of Iowa is 43.31.¹⁴

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources, and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often

¹⁴ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can function as proxies for community capacity. The following table lists the components and scores for the City of Algona compared to the county.

Table ALG.4: Rural Capacity Index

Components of Index	City of Algona	Kossuth County
County is Metropolitan?	No	No
Has a Head of Planning?	Yes	Yes
Has a College or University?	Yes*	No
Adults with Higher Education:	20%	18%
Families Below Poverty Level:	4%	7%
Households with Broadband:	77%	78%
People without Health Insurance:	4%	5%
Voter Turnout:	80%	80%
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	-294	-2,350
Overall Rural Capacity Index Score (0-100)	66	66

Source: Headwaters Economics¹⁵

*The local planning team indicated that a satellite campus of Iowa Lakes Community College is located in Algona.

Plan Integration

Algona has multiple planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the city updates these planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

The City of Algona's funds are currently limited to maintaining current facilities and municipal systems. A large portion of municipal funds have been dedicated to a project to bury overhead powerlines and a project to purchase generators at the sanitary sewer plant and lift stations. The amount of municipal funds has remained about the same in recent years.

Comprehensive Plan (1995)

The comprehensive plan is designed to guide the future actions and growth of the city. The plan encourages infill development, encourages clustering of development in sensitive areas, and encourages preservation of open space in hazard-prone areas. The city plans to incorporate information from the hazard mitigation plan into its next comprehensive plan update. The plan is slated to be updated in 2024-2025.

¹⁵ Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.

<https://headwaterseconomics.org/equity/rural-capacity-map/>.

Floodplain Regulations (2018), Zoning Ordinance (2024), and Subdivision Regulations (2024)

The city's floodplain regulations, zoning ordinance, and subdivision regulations outline where and how development should occur in the future. These documents contain floodplain maps, prohibit some development within the floodplain, discourage development in the floodplain, discourage filling of wetlands, discourage development near chemical storage sites, consider wildfire and wildland urban interface, and include well setback requirements. There is no timeline to update any of these documents.

Capital Improvement Plan (2023)

The purpose of the capital improvement plan is for the city to strategize how to budget for nonrecurring physical or digital purchases. A capital improvement plan typically spans multiple years and includes financing plans. The plan includes the following: storm water projects, upsizing of culverts and drainage structures, regular maintenance for drainage structures, storm sewer system upgrades, regular maintenance for the storm sewer system, improving transportation routes for drainage, installing new municipal wells, upsizing water distribution pipes, updating electrical distribution system, burying powerlines, looping electrical distribution to critical facilities, improving the existing fire hall and police headquarters, constructing a new public works facility, improving the existing water treatment facility, and improving the wastewater treatment facility. Other projects include street reconstruction projects, sanitary sewer improvements, and parks improvements. In a future update, the city would like to include widening roadways that would improve evacuation routes. The plan is currently a working document; however, the city plans to adopt a formal plan annually beginning in 2024.

Building Codes (2024)

The building code sets standards for constructed buildings and structures. The city adopted codes based on the 2017 International Building Code. These codes regulate and govern the conditions and maintenance of all property, buildings, and structures by providing the standards for supplied utilities, facilities, and other physical things and conditions essential to ensure that structures are safe, sanitary, and fit for occupation and use.

Wellhead Protection Plan

The purpose of wellhead protection plans is to protect the public drinking water supply wells from contamination. It includes identifying potential sources of groundwater contamination in the area.

Future Development Trends

In the last five years, the city has seen new housing, businesses, and roads. Some buildings were also demolished. New residential developments were built on the east side of the city. Two new commercial structures were built in the floodplain at the intersection of highways 18 and 169 (Scooters coffee and a car dealership). More residential is planned on the east side of town and a new industrial park is planned in the northeast corner of the city. The city's vulnerability may have been reduced by the demolition of dilapidated buildings. However, new development in the floodplain has increased the city's vulnerability in that area.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communication; Transportation; and Hazardous Material facilities.



Table ALG.5: Community Lifelines

CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	City Hall	Safety and Security	S	N
2	AMU HQ	Energy	-	N
3	Fire Station	Safety and Security	G, S	v
4	Law Enforcement Center - Police/Dispatch	Safety and Security	-	N
5	Library	Food, Water, and Shelter	S	N
6	Aquatic Center	Other	-	N
7	Airport	Transportation	-	N
8	Compost Site	Other	-	N
9	Street Dept. Shop	Transportation	-	N
10	Future Street Dept. Shop	Transportation	-	N
11	Algona Middle & High School	Other	S	N
12	Bryant Elementary	Other	S	N
13	Lucia Wallace Elementary	Other	S	N
14	Bertha Godfrey Elementary	Other	S	N
15	School Bus Barn	Transportation	-	N
16	Bishop Garrigan Schools	Other	S	N
17	Seton School/Bear Care (Bishop Garrigan Schools)	Other	S	N
18	Kossuth Regional Health Center	Health and Medical	G	N
19	County Fairgrounds	Other	-	N
20	YMCA	Food, Water, and Shelter	S	N
21	County Courthouse	Safety and Security	S	N
22	VFW Hall	Food, Water, and Shelter	S	N
23	KC Hall	Food, Water, and Shelter	S	N
24	Senior Center	Food, Water, and Shelter	S	N
25	Food Pantry	Food, Water, and Shelter	-	N
26	Algona Radio - KLGA	Communication	-	N
27	EMA Training & Response Building	Safety and Security	S	N
28	Alert Siren - HWY 18	Safety and Security	-	N
29	Alert Siren - Central Park	Safety and Security	-	N
30	Alert Siren - Northpark Dr	Safety and Security	-	Y (0.2%)

Section Seven: City of Algona Community Profile

CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
31	Alert Siren - Tietz Park	Safety and Security	-	N
32	Alert Siren - Locust St/PPI	Safety and Security	-	N
33	Alert Siren – Good Samaritan/Williams St Alley	Safety and Security	-	N
34	Water Treatment Plant	Food, Water, and Shelter	-	N
35	Water Tower (300K)	Food, Water, and Shelter	-	N
36	Water Tower (500K)	Food, Water, and Shelter	-	N
37	Power Plant	Energy	-	N
38	Substation - Ridgley St	Energy	-	N
39	Substation - N Finn Dr	Energy	-	N
40	Lift Station – Poplar St	Other	-	N
41	Lift Station – McDonalds	Other	-	N
42	Lift Station – Tietz	Other	-	N
43	Lift Station – W Call St	Other	-	N
44	WWTF	Other	-	N
45	Ag Processing Inc.-Algona	Hazardous Material	-	N
46	Algona Bulk Plant	Hazardous Material	-	N
47	Algona Classic Stop	Hazardous Material	-	N
48	Algona Municipal Utilities Comm Bldg	Hazardous Material	-	N
49	CCM Algona Plant	Hazardous Material	-	N
50	CenturyLink - Algona CO	Hazardous Material	-	N
51	Farmers Coop Elevator	Hazardous Material	-	N
52	Flint Hills Resources Pine Bend, LLC - Algona Facility	Hazardous Material	-	N
53	Iowa DOT Algona Maintenance Garage	Hazardous Material	-	N
54*	ITC Midwest Kossuth	Hazardous Material	-	N
55	K.C. Nielsen Ltd Algona	Hazardous Material	-	N
56*	Mathy Construction Co #23	Hazardous Material	-	N
57	New Cooperative, Inc., Algona	Hazardous Material	-	N
58	Pioneer Hibred Int Inc	Hazardous Material	-	N
59	Precision Pulley and Idler - Stainless	Hazardous Material	-	N
60	Smithfield Hog Production - Feed Mill*	Hazardous Material	-	N
61	Snap-on Tools Manufacturing Company	Hazardous Material	-	N

Source: Local Planning Team, E-Plan¹⁶

*Community Lifeline located outside of map viewing area.

16 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure ALG.4: Community Lifelines (#1-25)

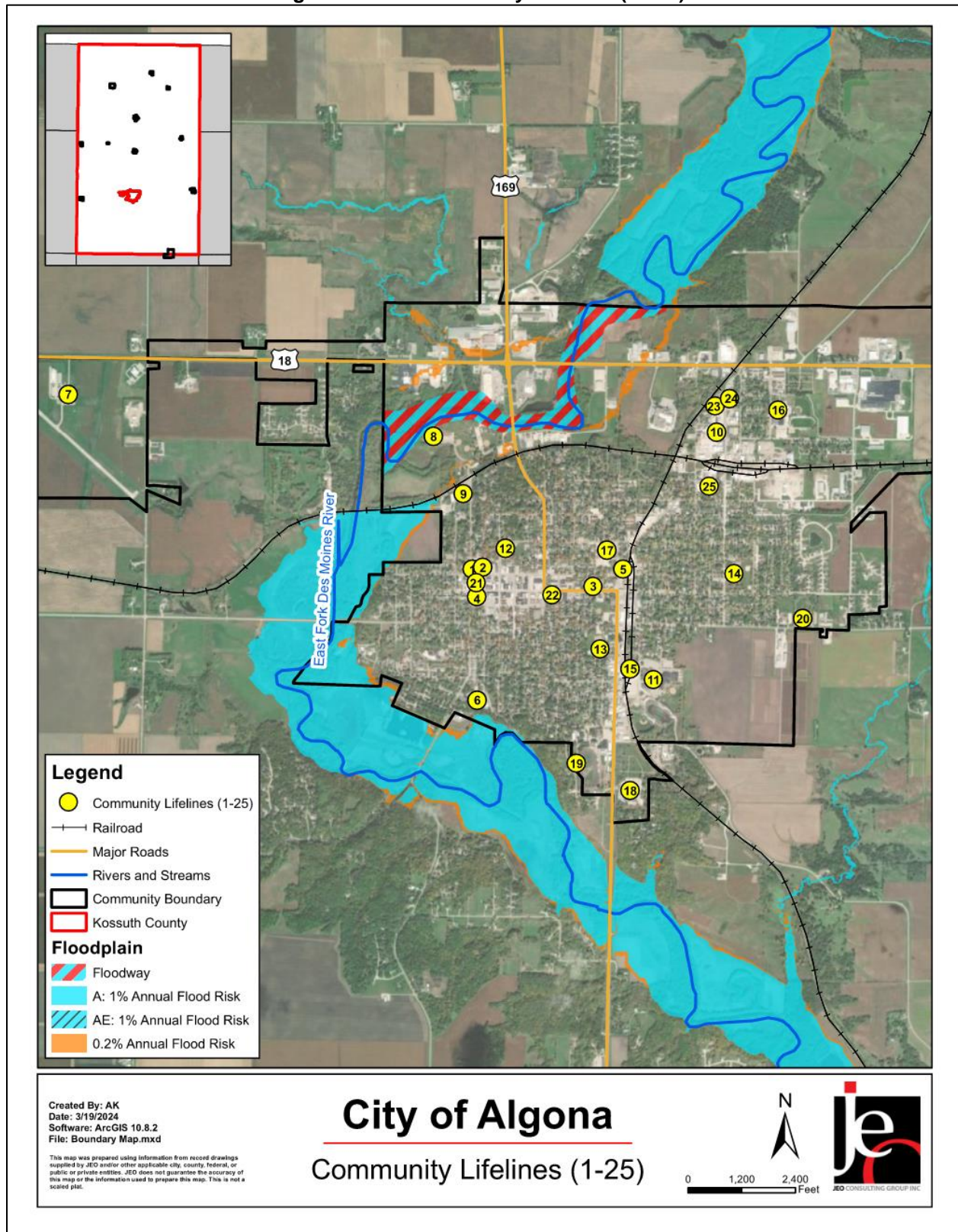
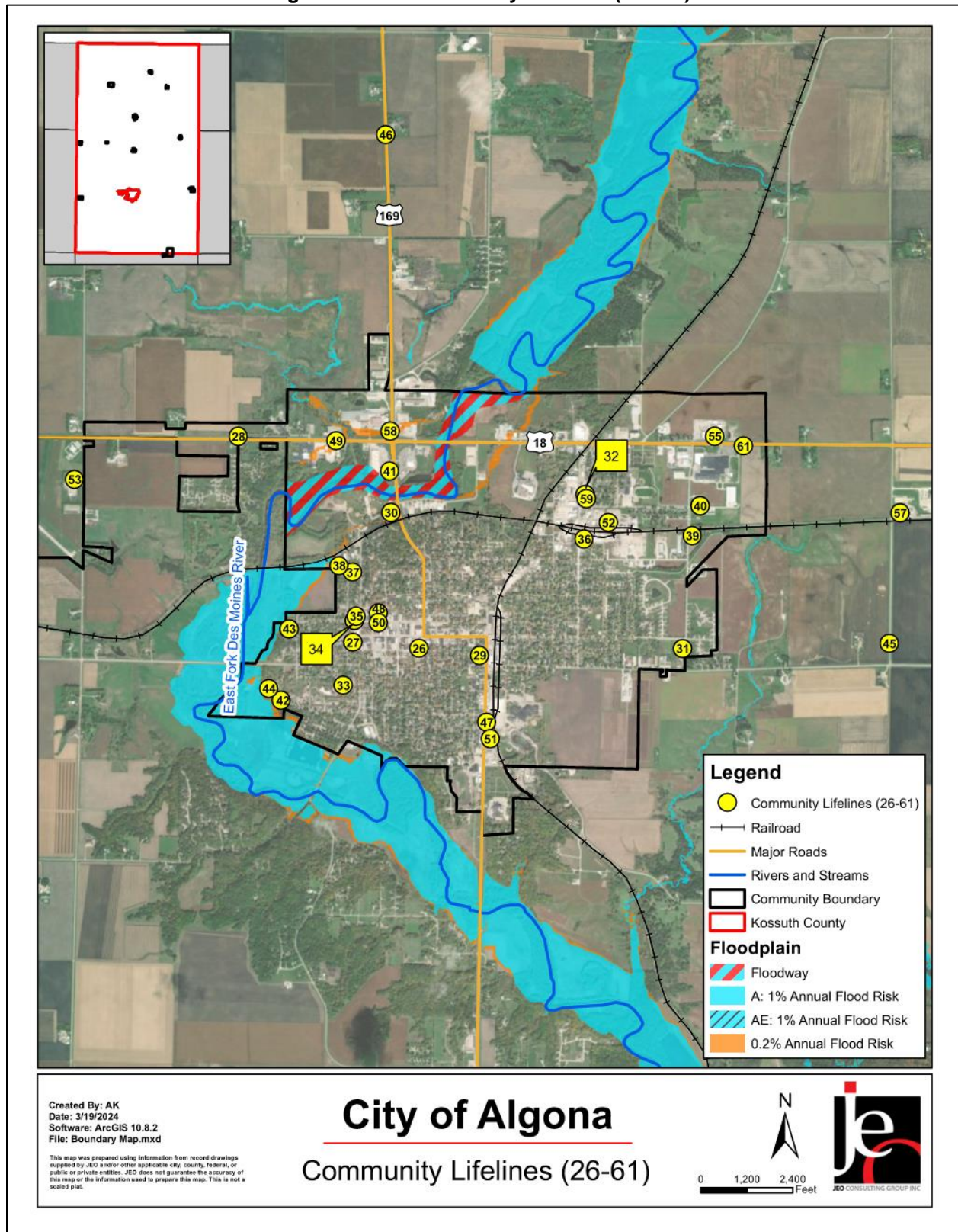


Figure ALG.5: Community Lifelines (#26-61)



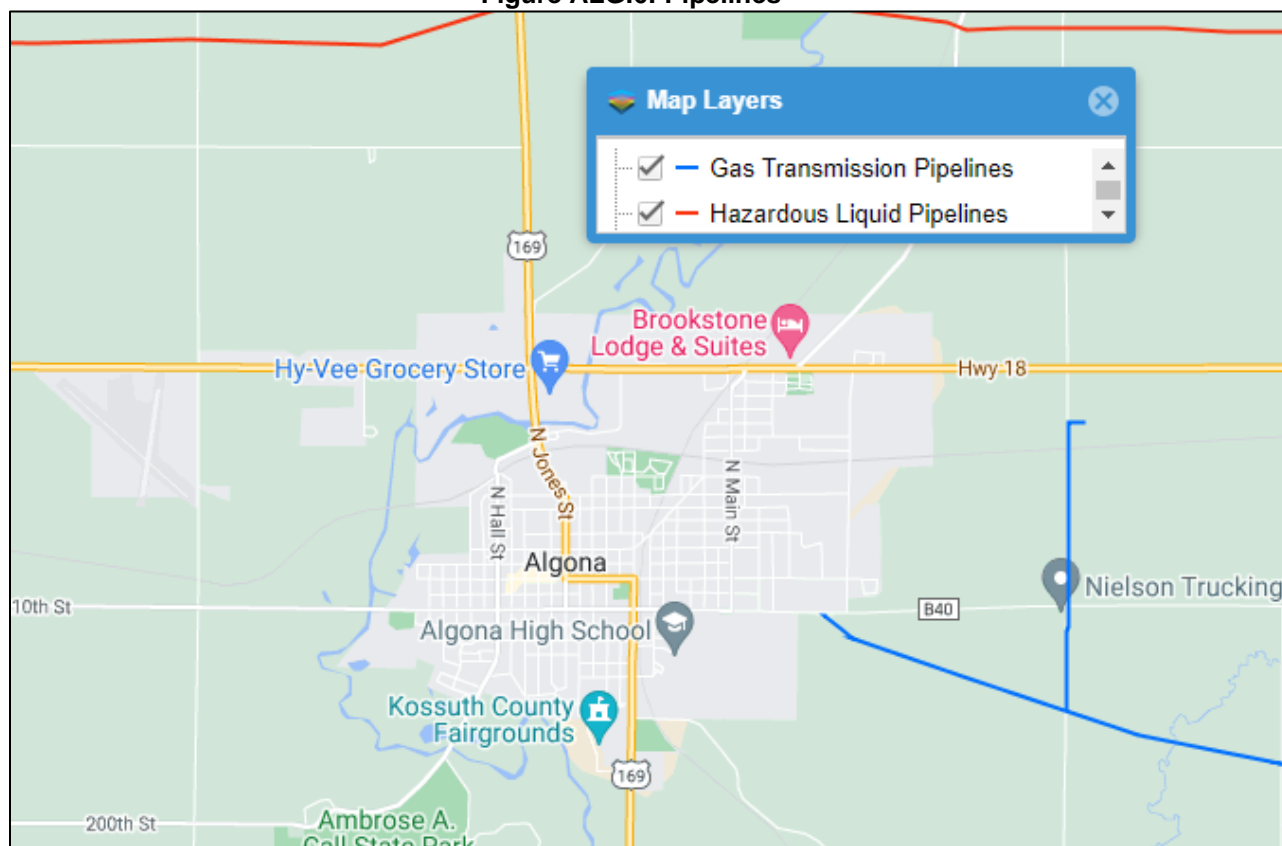
Transportation

Algona's major transportation routes include U.S. Highway 169, U.S. Highway 18, and County Roads B40 (Mc Gregor St), P30 (90th Ave), and P54 (Plum Creek Rd). Other routes of concern include Call St, State St, Main St, and Finn Dr. The most traveled route is Highway 169 with an average of 7,500 vehicles daily, 352 of which are trucks.¹⁷ Algona has a Union Pacific rail line that travels north-south through the city and a Canadian Pacific line that runs east-west through the city. The Algona Municipal Airport is located on the western edge of Algona.¹⁸ According to the local planning team, no significant transportation events have occurred locally. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. There are two gas transmission pipelines and one hazardous liquid pipeline that travel near Algona. These can be seen in Figure ALG.6.

Figure ALG.6: Pipelines



Source: National Pipeline Mapping System¹⁹

17 Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

18 Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023. <https://iowadot.gov/aviation/airport-information>.

19 National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are 21 chemical storage sites within or near Algona that contain hazardous materials (listed in Table ALG.5). The planning team indicated that various chemicals such as fuel and agricultural chemicals are regularly transported along local routes. The team noted that no significant chemical spills have happened in Algona.

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of October 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Table ALG.6: Algona Parcel Improvements and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
9,079	\$1,349,180,635	620	\$96,442,510	7%

Source: County Assessor, 2023

Table ALG.7: Algona Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
9,079	\$1,349,180,635	574	\$98,297,726	6%

Source: County Assessor, 2023

Table ALG.8: Algona Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000A	3/20/2018	Flood Insurance Study
LOMA	19-07-1407A-190180	6/25/2019	Structure not removed from SFHA

Source: FEMA Flood Map Service Center²⁰

20 Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Flooding

According to the NCEI, there were 12 flood events in Algona from 1996 to January 2023. These events resulted in \$515,000 in property damage, but no injuries or fatalities. The local planning team indicated that the city experiences localized flash flooding in certain areas when the storm sewer system reaches capacity; especially in the Garrigan neighborhood and south of Lucia Wallace Elementary School. Flooding was identified as a top concern for the community for multiple reasons. The East Fork of the Des Moines River bisects the city and increases flood risk. The city was built on a low lying, wet area which was drained with tile, especially on the east side of town. In extreme conditions, stormwater has infiltrated the sanitary sewer system, forcing the city to bypass, with sewers backing up in basements.

One project the city recently completed to reduce risk or vulnerability to flooding is the adoption of a Storm Water Management ordinance, requiring storm water management plans for new development and redevelopment projects that impact more than one acre of land or more than 10,000 sq ft of impervious surface. The city has also replaced and upsized storm sewer infrastructure as streets are re-done. Other projects include new sanitary sewer lining, manhole reconstruction, heavy sewer cleaning, and adoption of a private property sewer assurance cost share program to install devices to prevent sewer backups. The city has also incorporated green storm water management improvements with infrastructure projects, such as permeable pavers, bioretention cells, retention basins, and rain gardens to treat stormwater runoff and reduce peak flows. Historically, the city has removed structures from the floodplain and enforced their floodplain ordinance.

Projects needed in the future to reduce risk to the community include: the extension of storm sewer infrastructure and upsizing of storm mains and/or construction of storm water retention facilities in the Garrigan Neighborhood; maintenance of existing and replacement/upsizing of storm sewer infrastructure; and maintenance and sealing of sanitary sewer infrastructure to reduce inflow and infiltration into the sanitary sewer system.

As noted above, Algona is a member of the NFIP, having joined on 6/1/1983. The initial FIRM for the city was delineated on 6/1/1983 and the current effective map date is 3/20/2018, which has been adopted and incorporated into the local floodplain management regulations. As of September 30, 2022, there are no NFIP policies in-force for the city. Algona does not currently have any repetitive loss or severe repetitive loss structures.

According to the Risk Factor website, Algona has a minor risk of flooding, with 82 properties and 15 miles of road having a greater than 26% chance of being severely affected by flooding over the next 30 years. That risk is unlikely to change in the next 30 years.²¹

Severe Thunderstorms (includes Hail & Lightning)

Severe thunderstorms are a regular part of the climate and weather in the Midwest. These storms can cause damage through heavy rain, lightning strikes, hail, and high winds. The NCEI reports 115 instances of severe thunderstorms that occurred in Algona from 1996 to January 2023. These storm events resulted in \$1,143,000 in property damage, with no injuries or deaths. The local planning team identified this hazard as a top concern due to its frequency, potential severity, and damage to infrastructure. Projects completed to reduce risk of severe thunderstorms includes electric infrastructure improvements such as burying powerlines, generator at AMU powerplant, and setting up redundancies.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for Algona. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. The local planning team selected this as a hazard of top concern due to their regular occurrence and wide range of severity. Projects completed to reduce the risk to this hazard include public awareness efforts and acquiring and maintaining equipment to maintain streets, haul snow, and clean up trees/debris after storms. More public awareness and additional snow removal equipment is needed in the future.

Tornado and Windstorm

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and two tornadoes in Algona. The first was an F2 tornado in May 1998 that resulted in \$1,000,000 in property damage. The second was an F0 in July 2005 that resulted in \$30,000 in property damage. No injuries or deaths were reported from either.

According to the local planning team, an F3 tornado hit the city in June 1979, destroying more than 100 homes and 20 businesses, and damaging more than 300 homes. An estimated \$25,000,000 in damage was reported. Two people died as a result of the event.

This hazard was selected as a top hazard by the planning team for multiple reasons. These include: firsthand experience of the devastation of a tornado, a disproportionately older population, the increased amount of people that can be within the city at a time due to being the education and workforce hub of the county, and the large amount of people within school buildings and nursing homes at one time. To reduce its risk to this hazard, the city maintains five tornado/storm sirens and the fire department/emergency services are properly trained and perform weather spotting. Projects needed in the future include encouraging construction of tornado shelters in new homes as most new homes do not have basements, as well as coordinating with county emergency management on sheltering locations in the area.

²¹ Risk Factor. "Flood Factor: Algona, Iowa". Accessed March 2024. https://riskfactor.com/city/algona-ia/1901135_fsid/flood.

Mitigation Strategy

Completed Mitigation and Strategic Actions

Mitigation Action	Amend Floodplain Regulations to Remain in NFIP
Description	Recently, FEMA and IDNR completed an update to the Kossuth County flood insurance rate maps (FIRMs). To maintain good standing with the NFIP, the city must amend floodplain regulations to reference the effective date of the new maps, which is 3/20/2018.
Hazard(s)	Flooding
Status	The updated FIRM was added to the city floodplain regulations and adopted in 2018.

Continued Mitigation and Strategic Actions

Mitigation Action	Emergency Management Plans
Description	Develop/update/publicize emergency management plans, including preparedness, response recover, operations, long term recovery, and mitigation plans and maintain data inventory
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Mayor
Status	In progress.

Mitigation Action	Safe Rooms
Description	Construct or retrofit existing structures into public safe rooms at government facilities, recreational facilities, recreational areas, manufactured home parks, schools, childcare centers, and other critical facilities
Hazard(s)	Tornado and Windstorm, Severe Thunderstorms, Severe Winter Storms
Estimated Cost	\$250,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited resources.

Mitigation Action	Continuity of Operations Plan (COOP)
Description	Develop a Continuity of Operations Plan to use during a disaster that provides a means to continue operations, who is in charge, where to set up control and command, etc.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	A basic plan is in place; To be reviewed and updated/replaced with more comprehensive version; review/update evacuation routes.

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000
Local Funding Source	City General Fund
Timeline	1 year
Priority	High
Lead Agency/Department	Mayor, EMA
Status	A portable generator is located in the FY2025 Sanitary Sewer Budget. AMU maintains diesel generators at power plant that can/are called online when necessary.

Mitigation Action	Heating/Cooling Centers
Description	Build or designate dedicated heating and cooling centers/shelters
Hazard(s)	Extreme Temperatures
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited resources.

Mitigation Action	Preserve Natural and Beneficial Floodplain Functions
Description	Preserve natural and beneficial functions of floodplain land through measures such as: retaining natural vegetation, restoring streambeds, and preserving open space in the floodplain.
Hazard(s)	Flooding
Estimated Cost	\$25,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	High
Lead Agency/Department	Mayor, EMA
Status	The city is looking at some stream bank improvements for the future.

Mitigation Action	Bury Overhead Powerlines
Description	Work with local electric providers to identify vulnerable transmission and distribution lines and plan to bury lines undergrounds or retrofit existing structures to be less vulnerable to storm events. Electrical utilities should be required to use underground construction methods where possible for future installation of power lines.
Hazard(s)	Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000+
Local Funding Source	AMU Electric Utility
Timeline	5+ years
Priority	Medium
Lead Agency/Department	AMU
Status	Much of the city's overhead feeder/service lines have been buried; continue to bury throughout rest of city

Mitigation Action	Purchase Backup Generators and Pumps for Sanitary Sewer System
Description	Replace/upgrade and maintain backup generator at WWTF; purchase and maintain generator for lift stations; maintain existing and purchase additional pumps to bypass if/when necessary.
Hazard(s)	Flooding, Infrastructure Failure
Estimated Cost	\$100,000+
Local Funding Source	Sanitary Sewer Utility
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Sanitary Sewer Department
Status	Not started

Mitigation Action	Continue Participation in the National Flood Insurance Program (NFIP)
Description	Maintain/enforce floodplain ordinance regulations; maintain in compliance with national flood insurance program.
Hazard(s)	Flooding
Estimated Cost	Staff Time
Local Funding Source	City General Fund
Timeline	5+ years
Priority	High
Lead Agency/Department	City Building Official
Status	In progress.

Mitigation Action	Maintain and Upgrade Public Safety (Police and Fire) Equipment and Vehicles
Description	<ul style="list-style-type: none"> • Continue to replace fire equipment as needed (bunker gear, SCBA; etc.) Maintain fire trucks and continue to replace them in accordance with CIP. • Continue to replace police dept equipment and vehicles; keep stocked with first aid emergency supplies and AEDs. • Monitor status of potential construction of CO2 pipeline south of city limits; purchase new emergency vehicles and sensors as needed
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	High
Lead Agency/Department	Department Heads
Status	In progress.

Mitigation Action	Mitigate Emerald Ash Borer by Removing and/or Treating Ash Trees
Description	Remove and/or treat 700+ ash trees on city property. Emerald ash borer was discovered in Kossuth County south of Algona in 2022.
Hazard(s)	Animal/Plant Disease
Estimated Cost	\$500,000+
Local Funding Source	Urban Forest Utility, Local Sales Option Tax
Timeline	5+ years
Priority	Medium
Lead Agency/Department	Public Works Department
Status	Since 2022, the city has reviewed the condition of city ash trees to prioritize removals; began annual removal program in 2023; began residential cost-share program for treating ash trees in the ROW in 2023; adopted urban forest utility in 2024 to help fund mitigation efforts.

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Department Heads; Mayor; Communications Manager
Status	Annual Operation EDITH; continue to promote Alert Iowa program; continue to post severe storm and snow emergency information on city website, social media, and share with local media (KLGA and newspaper); Public Safety Night Out

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the Mayor, City Administrator, and Public Works Director. The plan will be reviewed and updated bi-annually. The public will be involved in the review and revision process through city council meetings.

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Community Profile

City of Bancroft

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table BAN.1: Bancroft Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Thomas Johnson	Mayor	City of Bancroft	Round 1 & 2
Crysti Neuman	City Clerk/Director	City of Bancroft	-

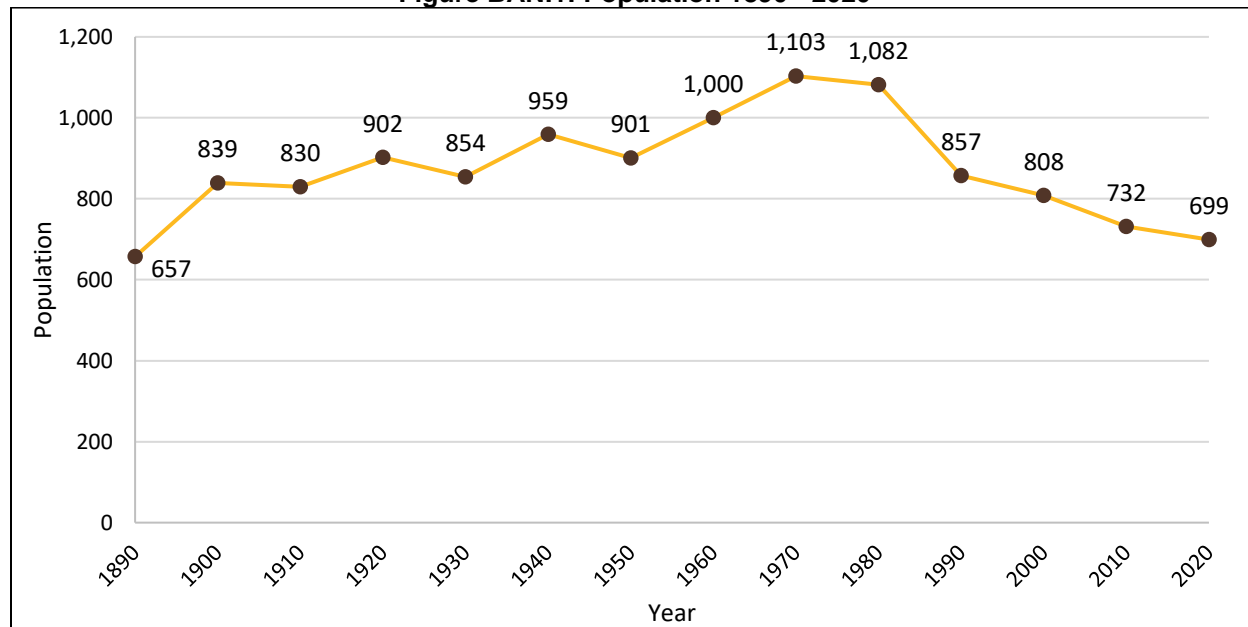
Location and Geography

The City of Bancroft is located in north central Kossuth County and covers an area of 0.55 square miles. The main waterway in the area is Mud Creek, which runs along the eastern edge of the city.

Demographics

Bancroft's estimated population in 2021 was 673. The following figure displays the historical population trend from 1890 to 2020. This figure indicates that the population of Bancroft dramatically increased from 1950 to 1970 only to dramatically decline from 1980 to 1990 and has since slowly declined. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which can make implementation of mitigation projects fiscally challenging. Bancroft's population accounted for 4.5% of Kossuth County's population in 2021.²²

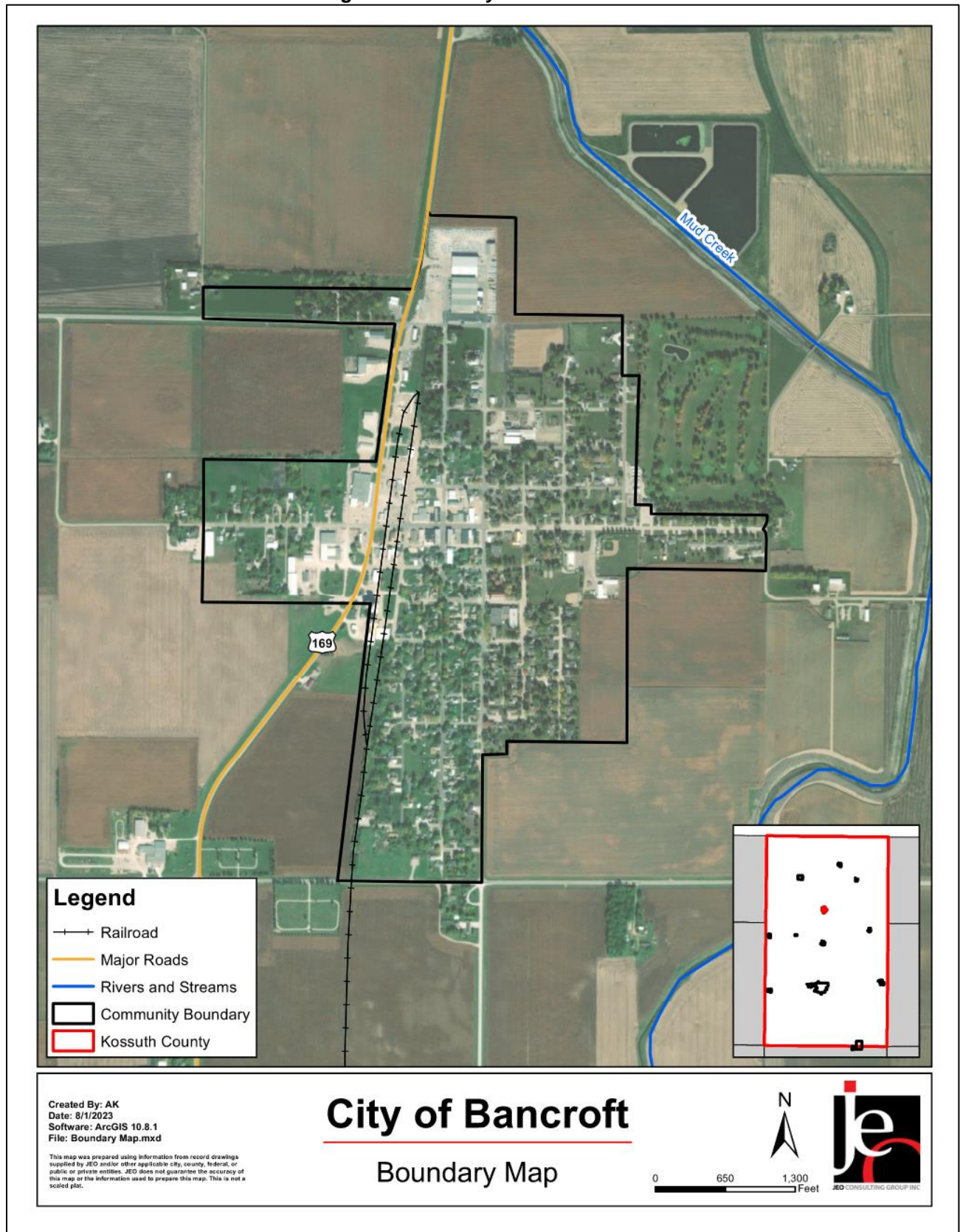
Figure BAN.1: Population 1890 - 2020



Source: U.S. Census Bureau

22 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Figure BAN.2: City of Bancroft

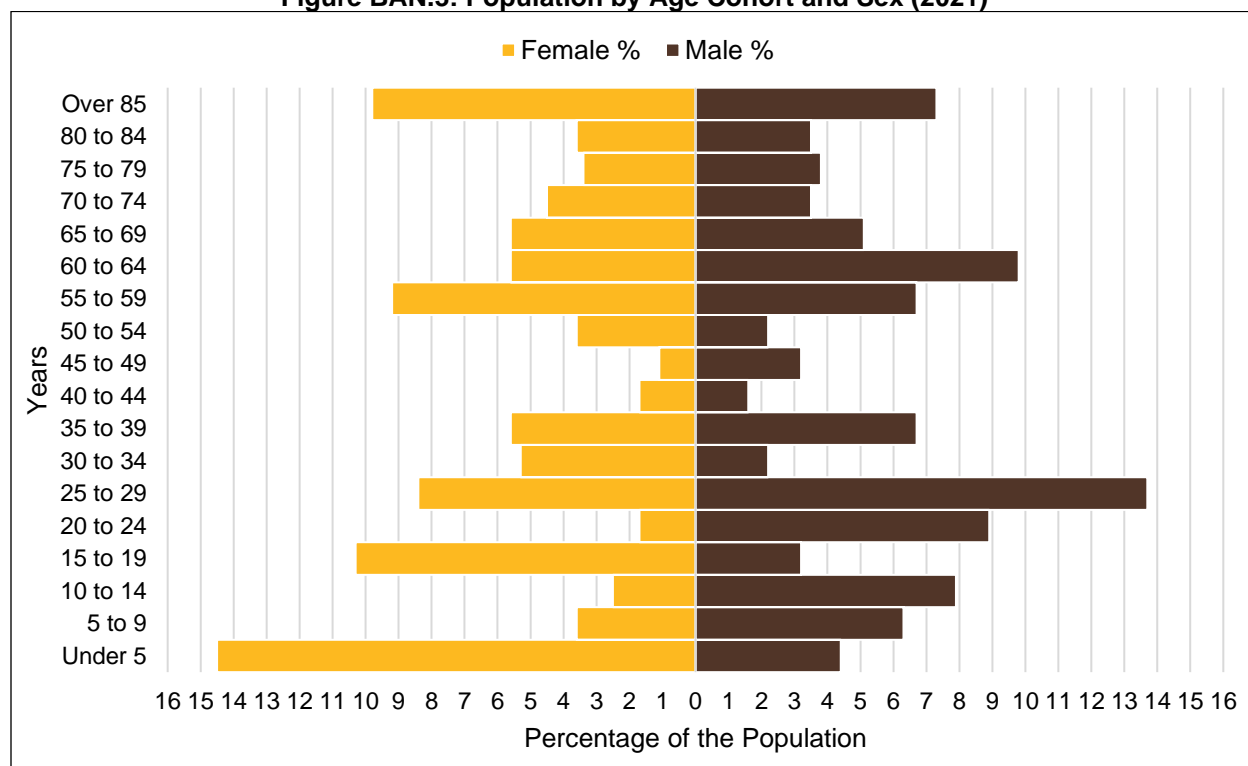


Section Seven: City of Bancroft Community Profile

The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Bancroft's population:

- **6.2% is non-white.** Since 2010, Bancroft became more racially diverse. In 2010, 1.2% of the Bancroft's population was non-white. By 2021, 6.2% was non-white.²³
- **Median age of 37.1.** The median age of Bancroft was 37.1 years old in 2021. The population became younger since 2010, when the median age was 44.1.²⁴

Figure BAN.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau²⁵

The figure above shows Bancroft's population percentage broken down by sex and five-year age groups. Bancroft's population is similarly spread throughout most age groups. This indicates that the population is likely to remain stable in the future.

23 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

24 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

25 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Bancroft's population has:

- **10.8% of people living below the poverty line.** The poverty rate (10.8%) in the City of Bancroft was lower than the state's poverty rate (11%) in 2021.²⁶
- **\$41,319 median household income.** Bancroft's median household income in 2021 (\$41,319) was \$24,110 lower than the state (\$65,429).²⁷
- **2.4% unemployment rate.** In 2021 Bancroft had a lower unemployment rate (2.4%) when compared to the state (3.9%).²⁸
- **13% of workers commuted 30 minutes or more to work.** Fewer workers in Bancroft commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (13% compared to 49.8%).²⁹

Major Employers

Major employers in Bancroft include Aluma, International Poultry Breeders, Red Power, Precision Management, and Ingalls Honey. A large percentage of residents commute to other communities for work, such as Alcona.

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Bancroft's housing stock has:

- **61.4% of housing built prior to 1970.** Bancroft has a larger share of housing built prior to 1970 than the state (61.4% compared to 49.9%).³⁰
- **8.8% of housing units vacant.** Bancroft has a lower vacancy rate (8.8%) compared to the rest of the state (9.3%).³¹

26 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

27 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

28 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

29 United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

30 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

31 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

Section Seven: City of Bancroft Community Profile

- **0% mobile and manufactured housing.** The City of Bancroft has a smaller share of mobile and manufactured housing (0%) compared to the state (3.5%).³²
- **36.1% renter-occupied.** The rental rate of Bancroft was 36.1% in 2021. This is higher than the state's rate of 28.4%.³³

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **83.8% of households have a broadband internet subscription.** Bancroft has a smaller share of households with broadband (83.8%) compared to the state (84.9%).³⁴

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Bancroft has a mayor, a five-member city council, and the following offices.

- City Clerk
- City Director/Administrator
- Administrative Assistant
- Utility Clerk
- Financial Officer
- Chief of Police
- Fire Chief
- Water/Sewer Superintendent
- Street Superintendent
- Electric Department Superintendent
- Library Board President

Capability Assessment

The planning team assessed the City of Bancroft's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects. The planning team indicated that debt has been taken for street projects, lagoon projects, and the city pool.

32 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

33 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

34 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

Table BAN.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Economic Development Plan	No
	Emergency Operations Plan	Yes
	Floodplain Management Plan	Yes
	Storm Water Management Plan	Yes
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	No
	Building Codes	No
	Source Water Protection Plan	No
	Water System Emergency Response Plan	No
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	No
	Floodplain Administration	No
	GIS Capabilities	No
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	No
	Gas/Electric Service Fees	Yes
	Storm Water Service Fees	Yes
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No

Survey Components/Subcomponents		Yes/No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Table BAN.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Community support to implement projects	Limited
Time to devote to hazard mitigation	Limited
Ability to expand and improve identified capabilities to achieve mitigation	Limited

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Bancroft, is Relatively Low (56.35). The average for the State of Iowa is 43.31.³⁵

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources, and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can function as proxies for community capacity. The following table lists the components and scores for the City of Bancroft compared to the county.

³⁵ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

Table BAN.4: Rural Capacity Index

Components of Index	City of Bancroft	Kossuth County
County is Metropolitan?	No	No
Has a Head of Planning?	No	Yes
Has a College or University?	No	No
Adults with Higher Education:	13%	18%
Families Below Poverty Level:	13%	7%
Households with Broadband:	75%	78%
People without Health Insurance:	6%	5%
Voter Turnout:	80%	80%
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	-94	-2,350
Overall Rural Capacity Index Score (0-100)	44	66

Source: Headwaters Economics³⁶

National Flood Insurance Program (NFIP)

Bancroft is a member of the NFIP, having joined on 9/1/1987. The initial FIRM for the city was delineated on 9/1/1987. There is currently no Special Flood Hazard Area in the city. As of September 30, 2022, there is one NFIP policy in-force for the city totaling \$1,000,000. Bancroft does not currently have any repetitive loss or severe repetitive loss structures. The city requires permits for development in the floodplain. According to the city's floodplain ordinance, the city director serves as the local floodplain administrator. This position is responsible for Bancroft's NFIP commitments and requirements, include enforcement of the local floodplain management regulations. The local planning team has said that Bancroft will continue to pursue good standing and involvement with the NFIP in the future.

After a flood event, the community implements substantial improvement and substantial damage provisions as outlined in FEMA's Substantial Improvement/Substantial Damage Desk Reference, which can be found here:

https://www.fema.gov/sites/default/files/documents/fema_nfip_substantial-improvement-substantial-damage-desk-reference.pdf.

Due to the community's lower capacity, as noted in the Rural Capacity Index, when substantial damage determinations are needed, state resources should be sought, or a contractor hired to assist.

Plan Integration

Bancroft has multiple planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the city updates these planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to

36 Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.
<https://headwaterseconomics.org/equity/rural-capacity-map/>.

Section Seven: City of Bancroft Community Profile

incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

The City of Bancroft's funds are currently limited to maintaining current facilities and municipal systems. A large portion of municipal funds have been dedicated to a pool project and to water, sewer, streets, and lagoon improvements. The amount of municipal funds has decreased in recent years. The city has been awarded small project grants for parks and recreation in the past.

Comprehensive Plan (2002)

The comprehensive plan is designed to guide the future actions and growth of the city. The plan limits density in areas adjacent to known hazardous areas, encourages infill development, identifies areas that need emergency shelters, and encourages preservation of open space in hazard-prone areas. The city plans to incorporate information from the hazard mitigation plan into its next comprehensive plan update. Currently there is no plan or timeline for the next update of the city's comprehensive plan.

Floodplain Regulations (2023), Zoning Ordinance (2002), and Subdivision Regulations (2002)

The city's floodplain regulations, zoning ordinance, and subdivision regulations outline where and how development should occur in the future. These documents prohibit some development within the floodplain, discourage development in the floodplain, include well setback requirements, and include the ability to implement water restrictions. In future document updates, the city plans to discourage development near chemical storage sites and along major transportation routes. It also plans to consider wildfire and the wildland urban interface in future updates. There is no timeline to update any of these documents.

Future Development Trends

In the last five years there have been four homes and three commercial buildings built. An additional water main was added to Summit Avenue and the city lined its sewers. A couple of streets were re-paved as well. No new structures were developed in the floodplain or other hazardous areas. No new housing or commercial developments are currently planned for the next five years. The city's overall vulnerability has not changed due to recent changes in development.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communications; Transportation; and Hazardous Material facilities.



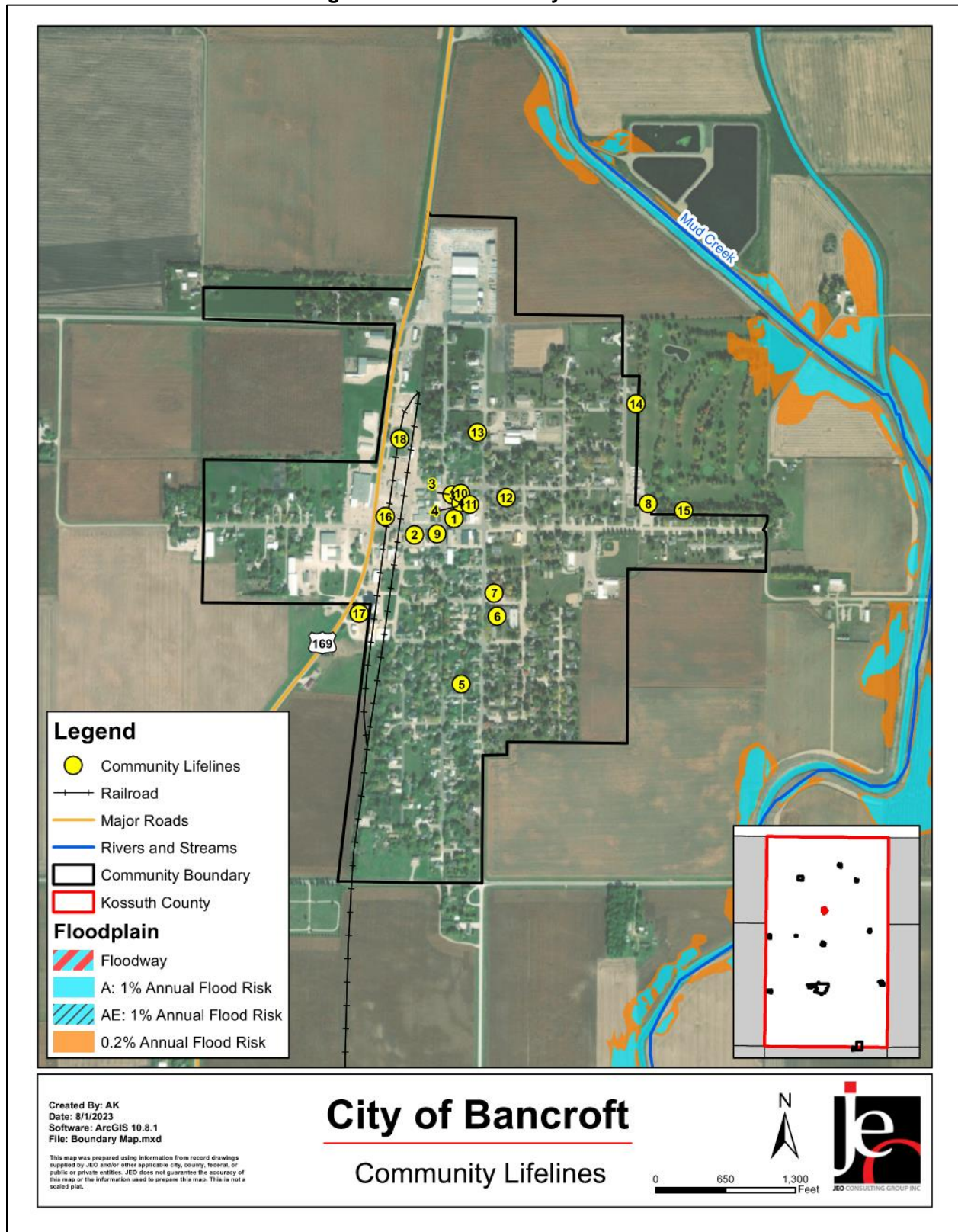
Table BAN.5: Community Lifelines

CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	City Hall	Safety and Security	S	N
2	Kossuth Regional Health Center – Bancroft Clinic	Health and Medical	-	N
3	Bancroft Fire Hall	Safety and Security	S	N
4	North Alert Siren	Communication	-	N
5	South Alert Siren	Communication	-	N
6	Summit Center	Food, Water, and Shelter	S	N
7	St. John Church Basement	Food, Water, and Shelter	S	N
8	NK Golf	Food, Water, and Shelter	S	N
9	Main Street Pub	Food, Water, and Shelter	S	N
10	Power Substation	Energy	-	N
11	Water Storage	Food, Water, and Shelter	-	N
12	Well 1	Food, Water, and Shelter	-	N
13	Well 2	Food, Water, and Shelter	-	N
14	North Lift Station	Other	G	N
15	South Lift Station	Other	-	N
16	StateLine Cooperative – Bancroft Facility	Hazardous Material	-	N
17	Standard Nutrition Company	Hazardous Material	-	N
18	New Cooperative, Inc	Hazardous Material	-	N

Source: Local Planning Team, E-Plan³⁷

37 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure BAN.4: Community Lifelines



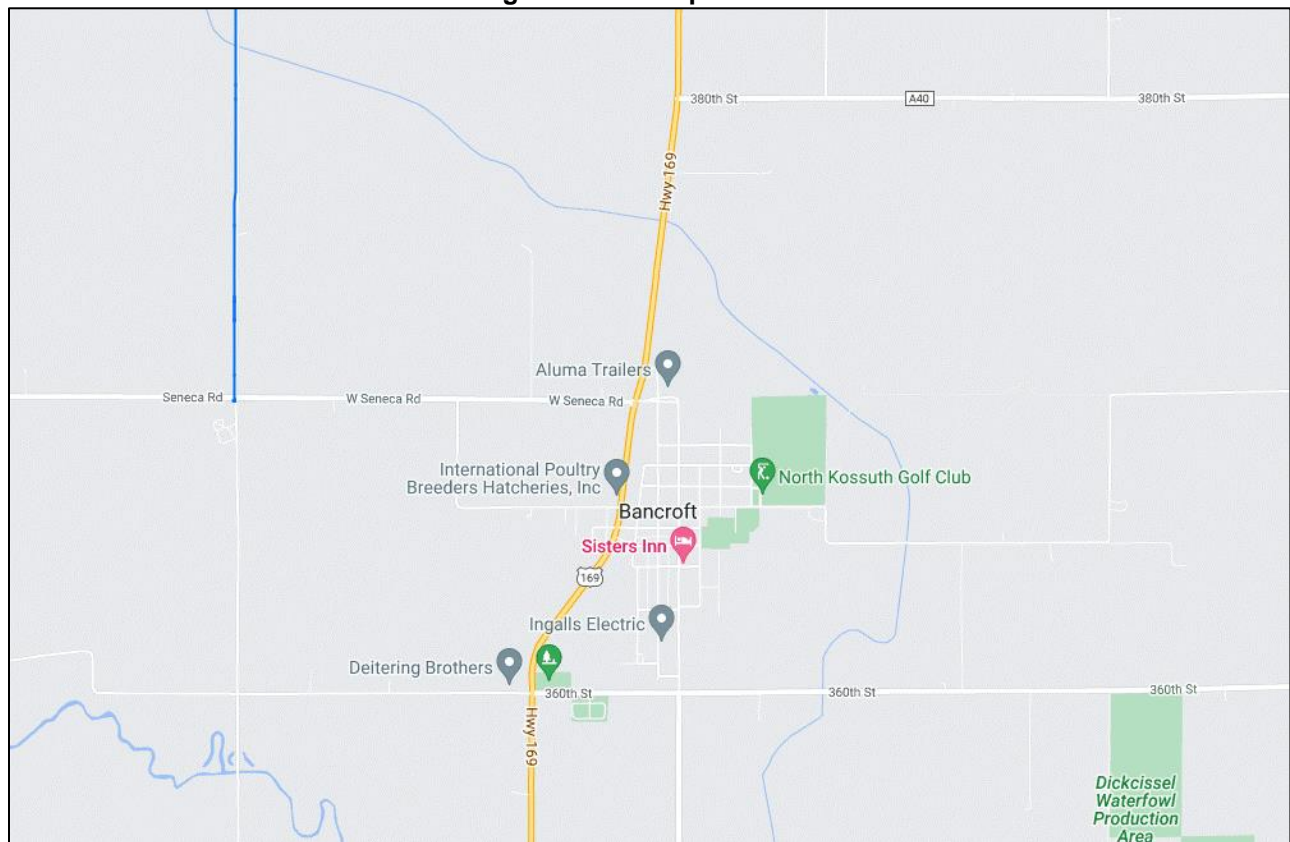
Transportation

Bancroft's major transportation routes include U.S. Highway 169 and County Road A42. The most traveled route is Highway 169 with an average of 2,180 vehicles daily, 433 of which are trucks.³⁸ Bancroft has no rail lines traveling through the community and no airport nearby.³⁹ No significant transportation events have occurred locally, according to the local planning team. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. There is one gas transmission pipeline that ends 1.5 miles northwest of the community. This can be seen on Figure BAN.5.

Figure BAN.5: Pipelines



Source: National Pipeline Mapping System⁴⁰

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are three chemical storage sites within or near Bancroft that contain hazardous materials (listed in Table BAN.5). The planning team indicated that chemicals such as anhydrous ammonia are regularly transported along Highway 169 and County Road A42. The team noted that no significant chemical spills have happened in Bancroft.

38 Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

39 Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023. <https://iowadot.gov/aviation/airport-information>.

40 National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of October 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (i.e., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Table BAN.6: Bancroft Parcel Improvements and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
399	\$49,090,209	0	-	-

Source: County Assessor, 2023

Table BAN.7: Bancroft Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
399	\$49,090,209	0	-	-

Source: County Assessor, 2023

Table BAN.8: Bancroft Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000A	3/20/2018	Flood Insurance Study

Source: FEMA Flood Map Service Center⁴¹

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Infrastructure Failure

The local planning team selected this as a top hazard due to the potential for sewers backing up into homes, storm sewers backing up onto streets, and water mains producing leaks. Specific vulnerabilities include aging infrastructure and the cost to repair or replace. The lack of local knowledge or skills to complete repairs is also a concern. The city jets out storm sewer lines every year (1/4 of the city) on a rotating basis. The city also replaced storm sewers that failed. A project needed in the future includes additional sewer lining.

41 Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

Severe Thunderstorms (includes Hail & Lightning)

Severe thunderstorms are a regular part of the climate and weather in the Midwest. These storms can cause damage through heavy rain, lightning strikes, hail, and high winds. The NCEI reports 26 instances of severe thunderstorms that occurred in Bancroft from 1996 to January 2023. These storm events resulted in \$872,000 in property damage, with no injuries or deaths. Some impacts from severe thunderstorms include damage to buildings and siding from hail and wind. The local planning team cited vulnerabilities such as power loss and damage to homes and people. The city has alert sirens and is also a part of the countywide RAVE notification system. The planning team noted that more notification buy-in from residents is needed as well as additional education. Additionally, backup generators are needed, and power lines need to be buried.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for Bancroft. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. Some impacts noted by the local planning team include frozen water pipes, icy roads, snow piles and drifts, and power outages. To reduce vulnerability and impacts to this hazard, the city would like to bury power lines and educate the public regarding such storms and how they can assist the city.

Tornado and Windstorm

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and one tornado in Bancroft. The tornado was an F0 and occurred on August 3, 1998. No damages, injuries, or deaths were reported. The local planning team cited vulnerabilities such as power loss and damage to homes and people. The city has alert sirens and is also a part of the countywide RAVE notification system. The planning team noted that more notification buy-in from residents is needed as well as additional education. Additionally, backup generators are needed, and power lines need to be buried.

Mitigation Strategy

Continued Mitigation and Strategic Actions

Mitigation Action	Emergency Management Plans
Description	Develop/update/publicize emergency management plans, including preparedness, response recover, operations, long term recovery, and mitigation plans and maintain data inventory
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Low
Lead Agency/Department	EMA, Mayor
Status	This project is on hold due to limited staff.

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Public Safety
Status	This project is on hold due to limited funding.

Mitigation Action	Continuity of Operations Plan (COOP)
Description	Develop a Continuity of Operations Plan to use during a disaster that provides a means to continue operations, who is in charge, where to set up control and command, etc.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited funding.

Mitigation Action	Safe Rooms
Description	Construct or retrofit existing structures into public safe rooms at government facilities, recreational facilities, recreational areas, manufactured home parks, schools, childcare centers, and other critical facilities
Hazard(s)	Tornado and Windstorm, Severe Thunderstorms, Severe Winter Storms
Estimated Cost	\$250,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited funding.

Mitigation Action	Flood-prone Property Acquisition
Description	Acquire flood prone properties for conversion into green space; or elevate structures to or above base flood elevation.
Hazard(s)	Flooding
Estimated Cost	\$500,000
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited funding.

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines. One generator is currently located at the lift station.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited funding.

Mitigation Action	Heating/Cooling Centers
Description	Build or designate dedicated heating and cooling centers/shelters
Hazard(s)	Extreme Temperatures
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited funding.

Mitigation Action	Enhance Security Measures
Description	Install and maintain security measures at all critical facilities.
Hazard(s)	Terrorism and Civil Unrest
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited funding.

Mitigation Action	Emergency Response Training
Description	Conduct training for emergency response personnel
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Fire Department, EMS
Status	The fire department and EMS provide emergency response training on a regular basis.

Mitigation Action	Promote Resiliency Through Codes and Regulations
Description	Develop and promote comprehensive, cost-effective, common-sense recommendations for adoption and enforcement of land use, ordinances and regulations, zoning, and building codes that decrease risk in areas susceptible to hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	EMA, Mayor, City Council
Status	This project is on hold due to limited staff and resources. The city does have zoning and floodplain regulations.

Removed Mitigation and Strategic Actions

Mitigation Action	Flood Protection
Description	Construct levees, dams, and/or culverts to ensure adequate capacity and protection levels for property and critical facilities.
Hazard(s)	Flooding
Reason for Removal	This project is no longer a priority for the city.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the Mayor and City Director. The plan will be reviewed and updated bi-annually. The public will be involved in the review and revision process through social media and city council meetings.

Community Profile

City of Burt

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table BUR.1: Burt Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Kelly Fitzgerald	City Clerk	City of Burt	-
Joe Jahnke	City Superintendent	City of Burt	Recordings
Jordan Jahnke	Fire Chief	City of Burt	-

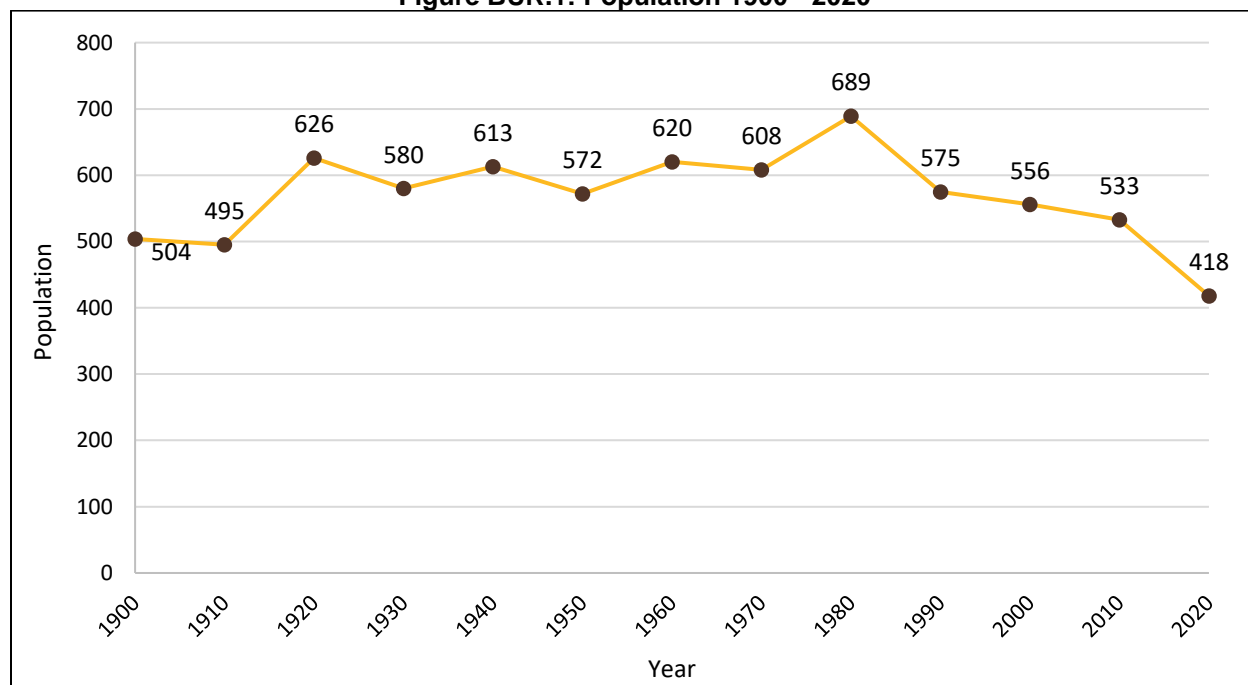
Location and Geography

The City of Burt is located in central Kossuth County and covers an area of 0.44 square miles. The main waterways in the area include the East Fork Des Moines River, which runs about two miles east of the city, and Smith Pool which is located approximately four miles northeast of Burt.

Demographics

Burt's estimated population in 2021 was 578. The following figure displays the historical population trend from 1900 to 2020. This figure indicates that the population of Burt has decreased since 1980. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which can make implementation of mitigation projects fiscally challenging. Burt's population accounted for 3.9% of Kossuth County's population in 2021.⁴²

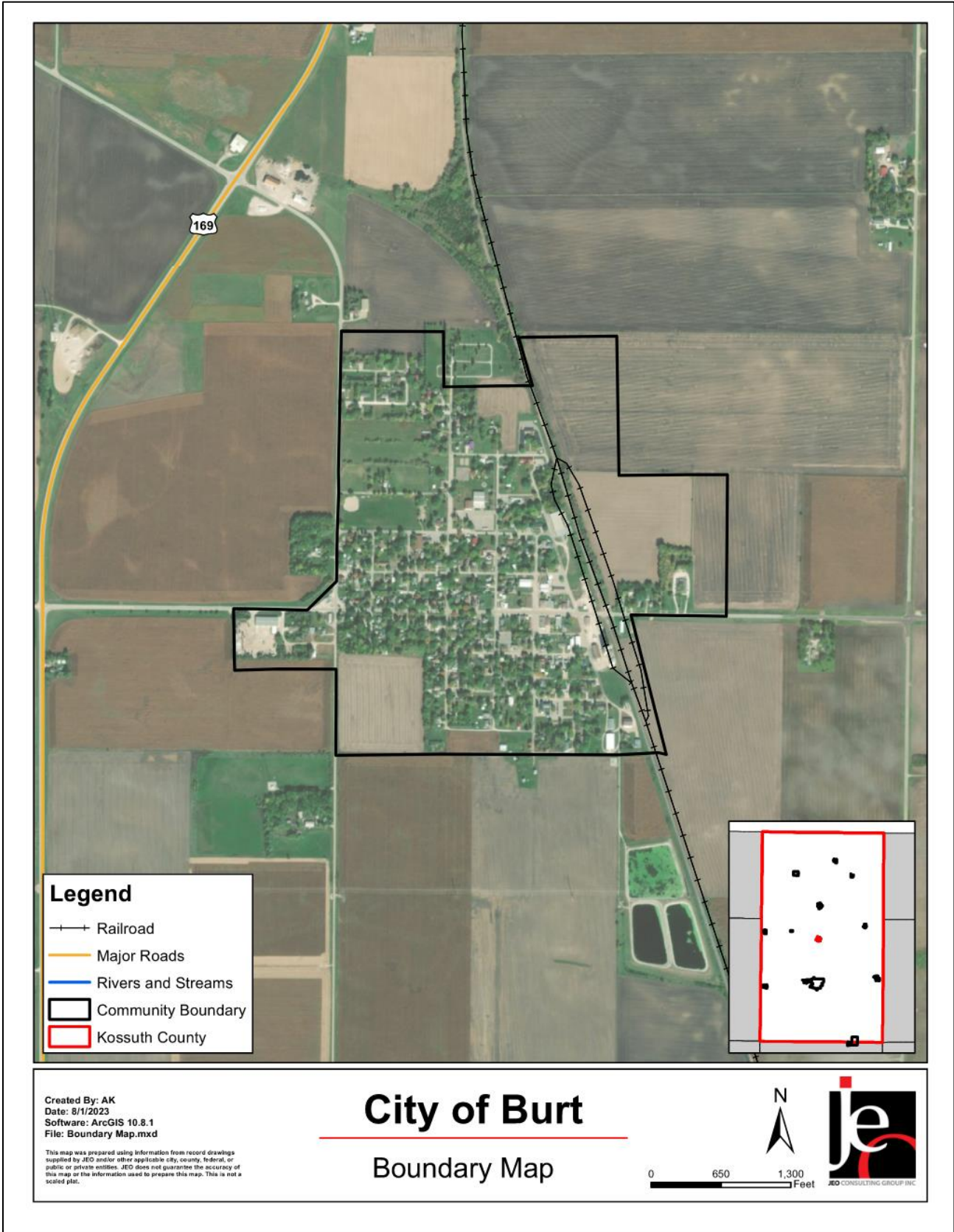
Figure BUR.1: Population 1900 - 2020



Source: U.S. Census Bureau

42 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Figure BUR.2: City of Burt

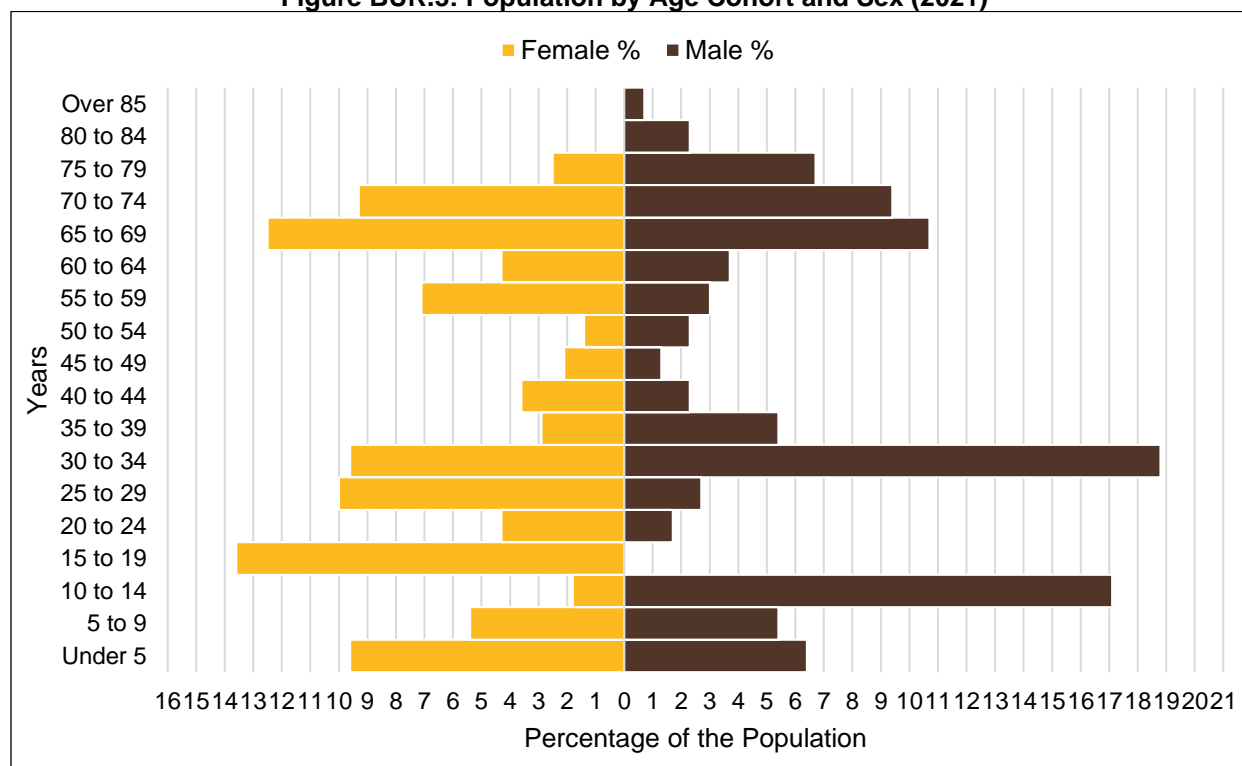


Section Seven: City of Burt Community Profile

The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Burt's population:

- **8.8% is non-white.** Since 2010, Burt became more racially diverse. In 2010, 2.1% of the Burt's population was non-white. By 2021, 8.8% was non-white.⁴³
- **Median age of 34.4.** The median age of Burt was 34.4 years old in 2021. The population became younger since 2010, when the median age was 38.6.⁴⁴

Figure BUR.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau⁴⁵

The figure above shows Burt's population percentage broken down by sex and five-year age groups. Burt's population is fairly well spread throughout age groups. This indicates that the population is likely to remain stable in the future.

43 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

44 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

45 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Burt's population has:

- **32.7% of people living below the poverty line.** The poverty rate (32.7%) in the City of Burt was higher than the state's poverty rate (11%) in 2021.⁴⁶
- **\$49,688 median household income.** Burt's median household income in 2021 (\$49,688) was \$15,741 lower than the state (\$65,429).⁴⁷
- **10.4% unemployment rate.** In 2021 Burt had a higher unemployment rate (10.4%) when compared to the state (3.9%).⁴⁸
- **19.3% of workers commuted 30 minutes or more to work.** Fewer workers in Burt commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (19.3% compared to 46.4%).⁴⁹

Major Employers

The only major employer within Burt is Stateline Cooperative. According to the local planning team, a large percentage of residents commute to Algona and Bancroft for work.

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Burt's housing stock has:

- **75.6% of housing built prior to 1970.** Burt has a larger share of housing built prior to 1970 than the state (75.6% compared to 49.9%).⁵⁰
- **15% of housing units vacant.** Burt has a higher vacancy rate (15%) compared to the rest of the state (9.3%).⁵¹

46 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

47 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

48 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

49 United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

50 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

51 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

Section Seven: City of Burt Community Profile

- **1.2% mobile and manufactured housing.** The City of Burt has a smaller share of mobile and manufactured housing (1.2%) compared to the state (3.5%).⁵²
- **9.8% renter-occupied.** The rental rate of Burt was 9.8% in 2021. This is lower than the state's rate of 28.4%.⁵³

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **82.3% of households have a broadband internet subscription.** Burt has a smaller share of households with broadband (83.8%) compared to the state (84.9%).⁵⁴

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Burt has a mayor, a five-member city council, and the following offices.

- Clerk/Treasurer
- Attorney
- Fire Chief
- Wastewater Plant Superintendent
- Water/Sewer Superintendent
- Solid Waste Superintendent
- Street Superintendent
- Electric Department Superintendent
- Library Board Chairperson
- Parks Superintendent

Capability Assessment

The planning team assessed the City of Burt's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

52 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

53 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

54 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

Table BUR.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	Yes
	Economic Development Plan	No
	Emergency Operations Plan	No
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	No
	Subdivision Regulation/Ordinance	No
	Floodplain Ordinance	No
	Building Codes	No
	Source Water Protection Plan	Yes
	Water System Emergency Response Plan	No
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	No
	Floodplain Administration	No
	GIS Capabilities	No
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	No
	Gas/Electric Service Fees	Yes
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No

Survey Components/Subcomponents		Yes/No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Table BUR.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Moderate
Community support to implement projects	Limited
Time to devote to hazard mitigation	Limited
Ability to expand and improve identified capabilities to achieve mitigation	Limited

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Burt, is Relatively Low (56.35). The average for the State of Iowa is 43.31.⁵⁵

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources, and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can function as proxies for community capacity. The following table lists the components and scores for the City of Burt compared to the county.

⁵⁵ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

Table BUR.4: Rural Capacity Index

Components of Index	City of Burt	Kossuth County
County is Metropolitan?	No	No
Has a Head of Planning?	No	Yes
Has a College or University?	No	No
Adults with Higher Education:	9%	18%
Families Below Poverty Level:	14%	7%
Households with Broadband:	72%	78%
People without Health Insurance:	6%	5%
Voter Turnout:	80%	80%
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	-44	-2,350
Overall Rural Capacity Index Score (0-100)	43	66

Source: Headwaters Economics⁵⁶

National Flood Insurance Program (NFIP)

Burt has chosen not to participate in the NFIP at this time due to the low flood risk to community structures and because of the minimal impacts from historical flooding. NFIP participation will be reevaluated if the community's flood risk changes. The initial FIRM for the city was delineated in 3/20/2018 and the current effective map date is 3/20/2018. Burt does not currently have any repetitive loss or severe repetitive loss structures.

Plan Integration

Burt has limited planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the city updates these planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

The City of Burt funds are currently limited to maintaining current facilities and municipal systems. The amount of municipal funds has decreased in recent years. The city was awarded FEMA and CDBG grants in the last five years.

Capital Improvement Plan (2023)

The purpose of the capital improvement plan is for the city to strategize how to budget for nonrecurring physical or digital purchases. A capital improvement plan typically spans multiple years and includes financing plans. The plan includes storm water projects, regular maintenance on drainage structures and the storm sewer system, updates to the electrical distribution system, burying powerlines, improving the existing public works facility, improving the existing community

56 Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.
<https://headwaterseconomics.org/equity/rural-capacity-map/>.

Section Seven: City of Burt Community Profile

center, constructing a new water treatment facility, improving the existing water treatment facility, and improving roads in the city. In future updates, the city would like to add the following projects: looping electrical distribution to critical facilities, installing backup generators at critical facilities, and constructing a new public works facility. There are currently no plans or timeline to update the capital improvement plan.

Wellhead Protection Plan (1988)

The purpose of wellhead protection plans is to protect the public drinking water supply wells from contamination. It includes identifying potential sources of groundwater contamination in the area.

Future Development Trends

In the past five years, the electric and sewer systems were upgraded, a street light project was completed, and some buildings were demolished. A water project is currently in process, as is a new apartment building. No new structures were developed in the floodplain or other hazardous areas. The city's overall vulnerability has not changed due to recent changes in development.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communications; Transportation; and Hazardous Material facilities.



Table BUR.5: Community Lifelines

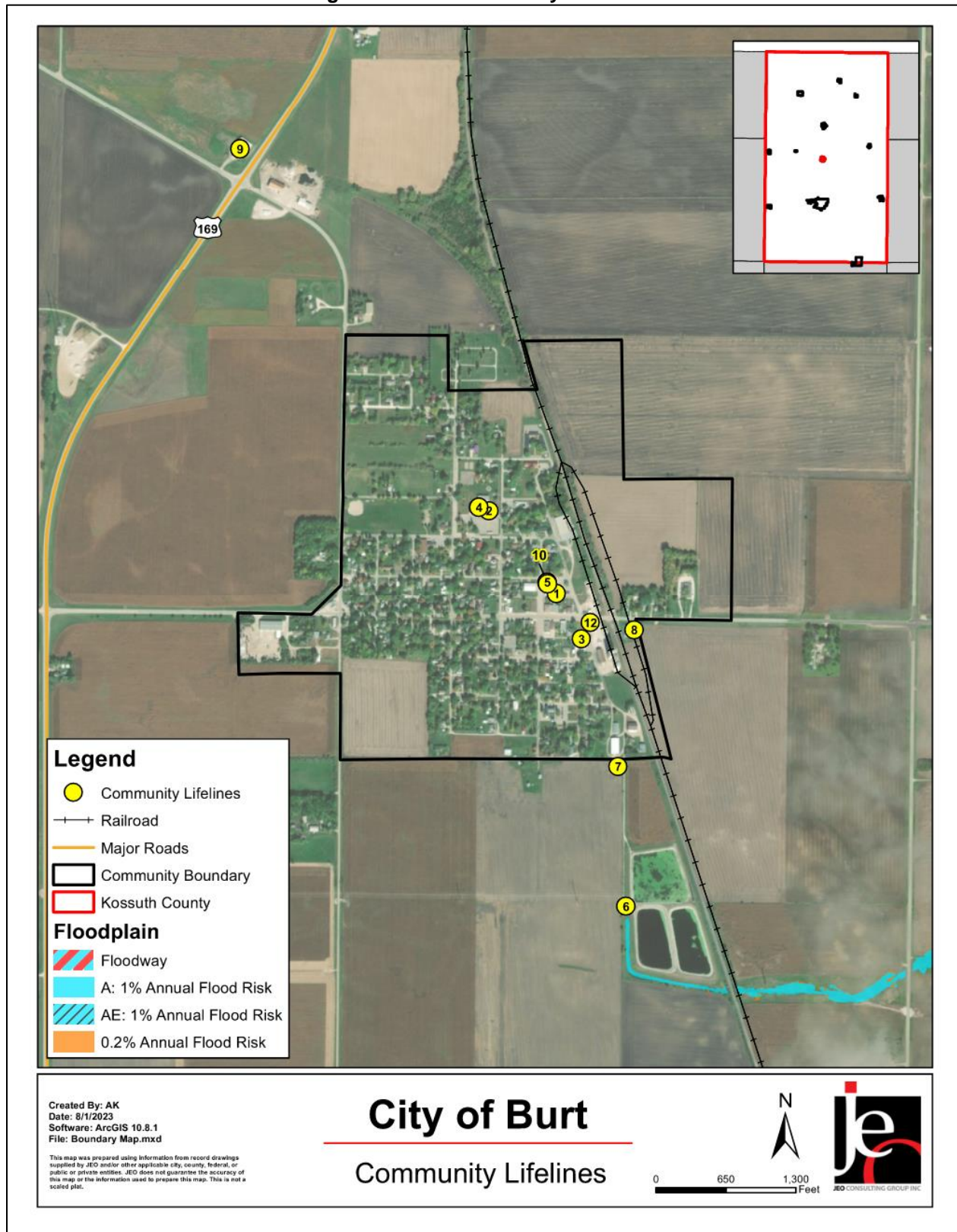
CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	Alert Siren 1	Communication	-	N
2	Alert Siren 2	Communication	-	N
3	Fire Station	Safety and Security	-	N
4	Activity Complex	Food, Water, and Shelter	G, S	N
5	City Building/Wells	Food, Water, and Shelter	G	N
6	Lift Station	Other	-	N
7	Power Substation	Energy	-	N
8	Burt Classic Stop	Hazardous Material	-	N
9	Burt LP Plant	Hazardous Material	-	N
10	Burt Water Department	Hazardous Material	-	N
11*	StateLine Cooperative - North Burt Facility	Hazardous Material	-	N
12	StateLine Cooperative - South Burt Facility	Hazardous Material	-	N

Source: Local Planning Team, E-Plan⁵⁷

*Community Lifeline located outside of map viewing area.

57 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure BUR.4: Community Lifelines



Transportation

Burt's major transportation routes include U.S. Highway 169 and County Roads B16 and B19. The most traveled route is Highway 169 with an average of 2,150 vehicles daily, 437 of which are trucks.⁵⁸ The curves on B19 east of town are also a concern. Burt has a Union Pacific rail line that travels north-south through the community. The closest airport is the Algona Municipal Airport, approximately nine miles southwest of Burt.⁵⁹ No significant transportation events have occurred locally, according to the local planning team. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. According to the National Pipeline Mapping System, there are no gas transmission pipelines or hazardous liquid pipelines that travel near community.⁶⁰

According to the Tier II System reports submitted to the Iowa Department of Natural Resources and the local planning team, there are five chemical storage sites within or near Burt that contain hazardous materials (listed in Table BUR.5). The team noted that no significant chemical spills have happened in Burt.

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of October 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Table BUR.6: Burt Parcel Improvements and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
279	\$17,236,627	0	-	-

Source: County Assessor, 2023

Table BUR.7: Burt Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
279	\$17,236,627	0	-	-

Source: County Assessor, 2023

58 Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

59 Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023. <https://iowadot.gov/aviation/airport-information>.

60 National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

Table BUR.8: Burt Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000A	3/20/2018	Flood Insurance Study

Source: FEMA Flood Map Service Center⁶¹

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Extreme Temperatures

The local planning team identified this as a hazard of top concern due primarily to the strain on the power grid and potential for power loss. Power loss from extreme temperatures has not yet impacted the community, but the historical strain suggests it is bound to happen at some point. The planning team indicated that backup generators are needed to reduce vulnerability. An update to the power substation is also needed. Shelter locations were deemed adequate by the planning team.

Infrastructure Failure

The local planning team selected this as a top hazard due to the aging city infrastructure. Downed trees from windstorms have damaged infrastructure in the past. The city has completed projects as needed to reduce risk to infrastructure failure, such as replacing the water filter and performing sewer and roads projects. The planning team indicated that sewer mains and lift stations need to be updated/replaced.

Severe Thunderstorms (includes Hail & Lightning)

Severe thunderstorms are a regular part of the climate and weather in the Midwest. These storms can cause damage through heavy rain, lightning strikes, hail, and high winds. The NCEI reports 13 instances of severe thunderstorms that occurred in Burt from 1996 to January 2023. These storm events resulted in \$94,000 in property damage, with no injuries or deaths. Some impacts from severe thunderstorms include damage to powerlines from downed trees, such as during a July 2022 event. The local planning team is concerned about such damage to trees and the electrical system. The city has done some tree trimming around power lines to reduce risk. Approximately 10% of the city's power lines are buried and the planning team expressed the need to bury more power lines.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for Burt. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According

61 Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. The local planning team noted that a February 2019 winter storm event impacted emergency services in the city, as EMS does not have the proper equipment to clear the snow to get to an emergency. Therefore, more specialized equipment is needed.

Tornado and Windstorm

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and no tornadoes in Burt. The local planning team indicated that the city replaced its tornado sirens in recent years. The local activity complex serves as a storm shelter for people to use during a tornado or windstorm event.

Mitigation Strategy

New Mitigation and Strategic Actions

Mitigation Action	Acquire Specialized Snow Removal Equipment
Description	Acquire specialized snow removal equipment to clear snow for EMS to navigate during emergency response calls.
Hazard(s)	Severe Winter Storms, Transportation Incident
Estimated Cost	\$50,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Mayor, EMS
Status	Not started

Mitigation Action	Bury Power and Service Lines
Description	Work with the local electric department to identify vulnerable transmission and distribution lines and plan to bury lines undergrounds or retrofit existing structures to be less vulnerable to storm events. Electrical utilities should be required to use underground construction methods where possible for future installation of power lines.
Hazard(s)	Severe Thunderstorms, Severe Winter Storms, Tornado & Windstorm
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	EMA, Mayor
Status	Not started

Section Seven: City of Burt Community Profile

Mitigation Action	Update/Replace Sewer Mains
Description	Update/Replace Sewer Mains
Hazard(s)	Flooding, Infrastructure Failure, Severe Thunderstorms
Estimated Cost	\$50,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Medium
Lead Agency/Department	EMA, Mayor
Status	Not started

Mitigation Action	Update/Replace Lift Stations
Description	Update/Replace Sewer Mains
Hazard(s)	Infrastructure Failure, Human Infectious Diseases, Flooding
Estimated Cost	\$50,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Medium
Lead Agency/Department	EMA, Mayor
Status	Not started

Continued Mitigation and Strategic Actions

Mitigation Action	Emergency Management Plans
Description	Develop/update/publicize emergency management plans, including preparedness, response recover, operations, long term recovery, and mitigation plans and maintain data inventory
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Low
Lead Agency/Department	EMA, Mayor
Status	This project is on hold due to limited funds.

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Public Safety
Status	In progress

Mitigation Action	Continuity of Operations Plan (COOP)
Description	Develop a Continuity of Operations Plan to use during a disaster that provides a means to continue operations, who is in charge, where to set up control and command, etc.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	In progress

Mitigation Action	Stormwater System and Drainage Improvements
Description	Drainage improvements may include ditch upsizing, ditch cleanout, and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates. Cleanout and reshaping of channel segments at bridge crossings can increase conveyance and reduce flooding potential.
Hazard(s)	Flooding, Infrastructure Failure
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	Mayor, EMA
Status	Not started

Mitigation Action	Safe Rooms
Description	Construct or retrofit existing structures into public safe rooms at government facilities, recreational facilities, recreational areas, manufactured home parks, schools, childcare centers, and other critical facilities
Hazard(s)	Tornado and Windstorm, Severe Thunderstorms, Severe Winter Storms
Estimated Cost	\$250,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Low
Lead Agency/Department	Mayor, EMA
Status	Not started

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	In progress

Mitigation Action	Heating/Cooling Centers
Description	Build or designate dedicated heating and cooling centers/shelters
Hazard(s)	Extreme Temperatures
Estimated Cost	\$10,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Low
Lead Agency/Department	Mayor, EMA
Status	In progress

Mitigation Action	Enhance Security Measures
Description	Install and maintain security measures at all critical facilities.
Hazard(s)	Terrorism and Civil Unrest
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	In progress

Mitigation Action	Wastewater System Improvements
Description	Construct, retrofit, or maintain wastewater infrastructure to ensure its proper functioning.
Hazard(s)	Flooding, Human Infectious Disease, Infrastructure Failure
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	High
Lead Agency/Department	Mayor, EMA
Status	In progress

Mitigation Action	Water Conservation Plan
Description	Develop a water conservation plan for use during periods of drought/low water supply.
Hazard(s)	Drought, Grass/Wildfire
Estimated Cost	\$10,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Low
Lead Agency/Department	EMA, Mayor, Fire Department
Status	Not started

Mitigation Action	Emergency Response Training
Description	Conduct training for emergency response personnel
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Low
Lead Agency/Department	EMA, Fire Department, EMS
Status	In progress

Removed Mitigation and Strategic Actions

Mitigation Action	Preserve Natural and Beneficial Floodplain Functions
Description	Preserve natural and beneficial functions of floodplain land through measures such as: retaining natural vegetation, restoring streambeds, and preserving open space in the floodplain.
Hazard(s)	Flooding
Reason for Removal	This project is no longer a priority for the city.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the City Superintendent, City Clerk and Fire Chief. The plan will be reviewed and updated bi-annually. The public will be involved in the review and revision process through city council meetings.

Community Profile

City of Fenton

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table FEN.1: Fenton Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Art Pixler	City Council Member	City of Fenton	Round 1 & 2
Gene Miller	Mayor	City of Fenton	-
Sue Potraz	City Clerk	City of Fenton	-
Dan Ulfers	City Council Member	City of Fenton	-
Ed Krause	City Council Member	City of Fenton	-
Sandra Del Rosso	City Council Member	City of Fenton	-
Gary Jentz	City Council Member	City of Fenton	-
Ryan Harms	Fire Chief	City of Fenton	-
Alex Suave	Volunteer Fireman	City of Fenton	-
Wade Potraz	EMS Director	City of Fenton	-
Chad Potraz	Public Works Superintendent	City of Fenton	-

Location and Geography

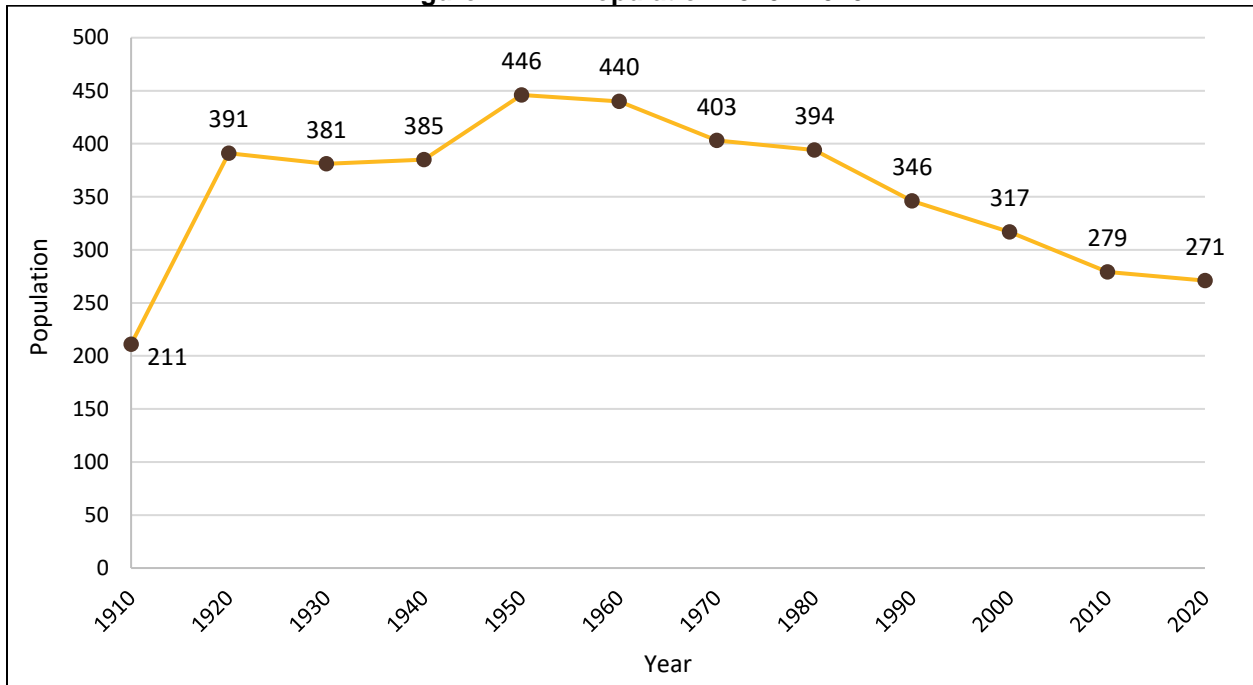
The City of Fenton is located in west central Kossuth County and covers an area of 0.34 square miles. The main waterways in the area include Lotts Creek, which runs along the western edge of the city, and Black Cat Creek which runs about one mile east of Fenton.

Demographics

Fenton's estimated population in 2021 was 235. The following figure displays the historical population trend from 1910 to 2020. This figure indicates that the population of Fenton steadily decreased since 1950. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which can make implementation of mitigation projects fiscally challenging. Fenton's population accounted for 1.6% of Kossuth County's population in 2021.⁶²

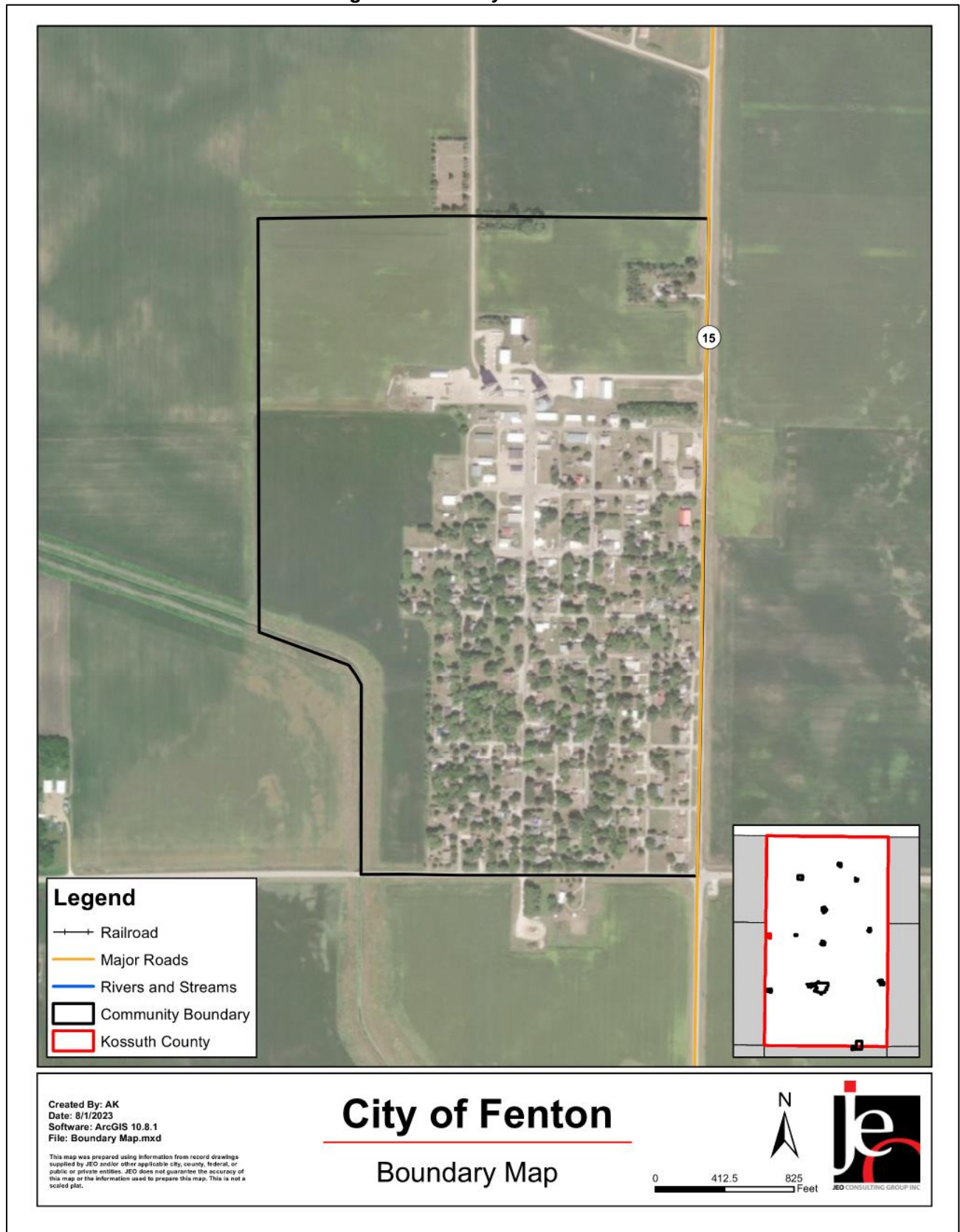
62 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Figure FEN.1: Population 1910 - 2020



Source: U.S. Census Bureau

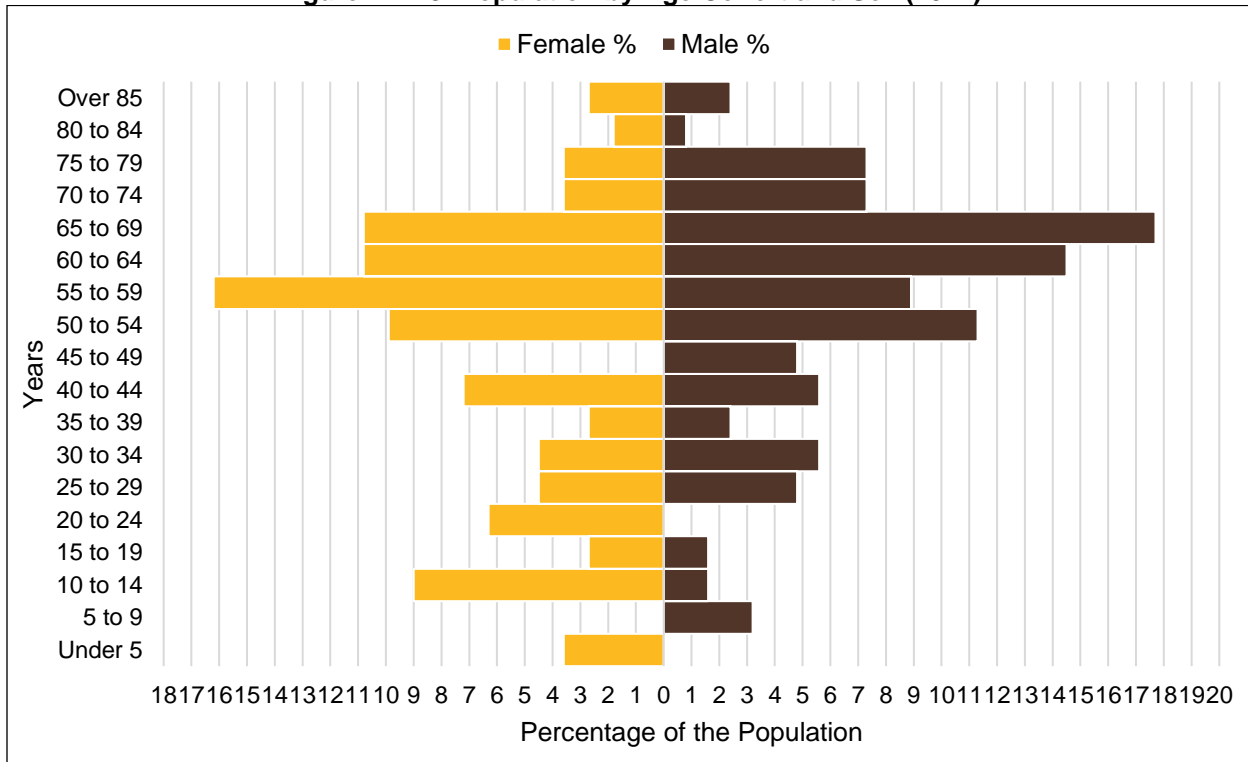
Figure FEN.2: City of Fenton



The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Fenton's population:

- **6% is non-white.** Since 2010, Fenton became more racially diverse. In 2010, 1.4% of the Fenton's population was non-white. By 2021, 6% was non-white.⁶³
- **Median age of 56.8.** The median age of Fenton was 56.8 years old in 2021. The population became older since 2010, when the median age was 49.9.⁶⁴

Figure FEN.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau⁶⁵

The figure above shows Fenton's population percentage broken down by sex and five-year age groups. Fenton's population is top heavy. This suggests future population decline as older generations are replaced by fewer younger residents.

63 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

64 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

65 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Fenton's population has:

- **8.5% of people living below the poverty line.** The poverty rate (8.5%) in the City of Fenton was lower than the state's poverty rate (11%) in 2021.⁶⁶
- **\$55,625 median household income.** Fenton's median household income in 2021 (\$55,625) was \$9,804 lower than the state (\$65,429).⁶⁷
- **2.8% unemployment rate.** In 2021 Fenton had a lower unemployment rate (2.8%) when compared to the state (3.9%).⁶⁸
- **28.1% of workers commuted 30 minutes or more to work.** The same amount of workers in Fenton commuted 30 minutes or more to work as workers commuting less than 15 minutes (28.1%).⁶⁹

Major Employers

According to the local planning team, there are several major employers in Fenton. These include:

- Stateline Cooperative
- West Iowa Bank
- North Star Lounge
- U.S. Post Office
- Fenton Cooperative Telephone Company
- City of Fenton
- JD Shaw and Custom Furniture and Cabinets
- Mike's Fix It
- Marv's Custom Cabinets
- Sentral Insurance Agency
- AJs Body Shop

The planning team also indicated that a large percentage of residents commute to other communities for work, such as:

- Algona
- Emmetsburg
- Bancroft
- Swea City
- Graettinger
- Armstrong
- Fairmont, Minnesota

66 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

67 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

68 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

69 United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Fenton's housing stock has:

- **88.4% of housing built prior to 1970.** Fenton has a larger share of housing built prior to 1970 than the state (88.4% compared to 49.9%).⁷⁰
- **27.9% of housing units vacant.** Fenton has a higher vacancy rate (27.9%) compared to the rest of the state (9.3%).⁷¹
- **0% mobile and manufactured housing.** The City of Fenton has a smaller share of mobile and manufactured housing (0%) compared to the state (3.5%).⁷²
- **3.2% renter-occupied.** The rental rate of Fenton was 3.2% in 2021. This is lower than the state's rate of 28.4%.⁷³

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **92.7% of households have a broadband internet subscription.** Fenton has a greater share of households with broadband (92.7%) compared to the state (84.9%).⁷⁴

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Fenton has a mayor, a five-member city council, and the following offices.

- Clerk/Treasurer
- Attorney
- Fire Chief

70 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

71 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

72 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

73 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

74 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

- Public Works Superintendent
- Library Board Chairperson
- Ambulance Director

Capability Assessment

The planning team assessed the City of Fenton's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Table FEN.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	No
	Economic Development Plan	No
	Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	No
	Source Water Protection Plan	Yes
	Water System Emergency Response Plan	No
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	No
	Floodplain Administration	No
	GIS Capabilities	No
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	Yes
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	No
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	No

Survey Components/Subcomponents		Yes/No
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Table FEN.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Community support to implement projects	Limited
Time to devote to hazard mitigation	Limited
Ability to expand and improve identified capabilities to achieve mitigation	Moderate

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Fenton, is Relatively Low (56.35). The average for the State of Iowa is 43.31.⁷⁵

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources,

⁷⁵ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can function as proxies for community capacity. The following table lists the components and scores for the City of Fenton compared to the county.

Table FEN.4: Rural Capacity Index

Components of Index	City of Fenton	Kossuth County
County is Metropolitan?	No	No
Has a Head of Planning?	No	Yes
Has a College or University?	No	No
Adults with Higher Education:	9%	18%
Families Below Poverty Level:	10%	7%
Households with Broadband:	80%	78%
People without Health Insurance:	7%	5%
Voter Turnout:	80%	80%
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	-31	-2,350
Overall Rural Capacity Index Score (0-100)	45	66

Source: Headwaters Economics⁷⁶

National Flood Insurance Program (NFIP)

Fenton is a member of the NFIP, having joined on 7/1/1997. The initial FIRM for the city was delineated on 7/1/1997, and the current effective map date is 3/20/2018. The city adopted the current effective flood map and floodplain ordinance in 2023. As of September 30, 2022, there are zero NFIP policies in-force for the city. Fenton does not currently have any repetitive loss or severe repetitive loss structures.

The city requires permits for development in the floodplain. According to the local planning team, the city superintendent serves as the local floodplain administrator. This position is responsible for Fenton's NFIP commitments and requirements, include enforcement of the local floodplain management regulations. Floodplain violations constitute a misdemeanor and if convicted, violators may face a fine or possible imprisonment. The local planning team has said that Fenton will continue to pursue good standing and involvement with the NFIP in the future.

After a flood event, the community implements substantial improvement and substantial damage provisions as outlined in FEMA's Substantial Improvement/Substantial Damage Desk Reference, which can be found here:

https://www.fema.gov/sites/default/files/documents/fema_nfip_substantial-improvement-substantial-damage-desk-reference.pdf.

⁷⁶ Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.
<https://headwaterseconomics.org/equity/rural-capacity-map/>.

Due to the community's lower capacity, as noted in the Rural Capacity Index, when substantial damage determinations are needed, state resources should be sought, or a contractor hired to assist.

Plan Integration

Fenton has multiple planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the city updates these planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

The City of Fenton's funds are currently limited to maintaining current facilities and municipal systems. A large portion of municipal funds have been dedicated to improvements to sewer and wastewater systems and to water tower improvements. The amount of municipal funds has decreased in recent years. The city has been awarded grants from SRF, USDA, and the Community Foundation of Northern Iowa in the past.

Floodplain Regulations (2023), Zoning Ordinance, and Subdivision Regulations

The city's floodplain regulations, zoning ordinance, and subdivision regulations outline where and how development should occur in the future. There is no timeline to update any of these documents.

Future Development Trends

In the past five years, no new structures have been built in Fenton. Six hazardous or abandoned buildings were demolished during that time. According to the local planning team, no new residential or commercial developments are currently planned for the next five years. The city's overall vulnerability may have been reduced due to the demolition of hazardous buildings.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communication; Transportation; and Hazardous Material facilities.



Table FEN.5: Community Lifelines

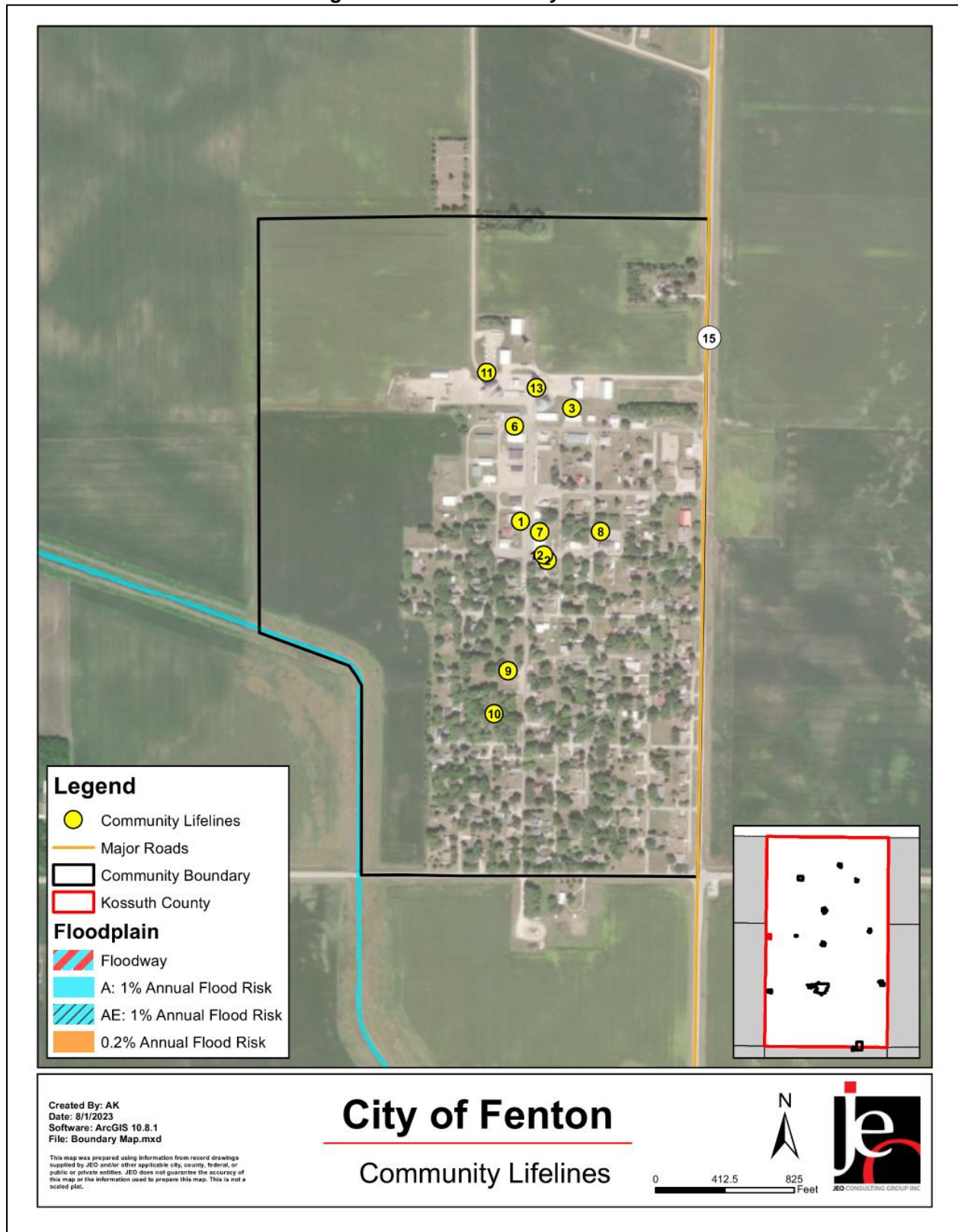
CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	Fenton Public Library	Other	S	N
2	Pump House	Food, Water, and Shelter	-	N
3	Fire Station	Safety and Security	G, S	N
4*	Sheriff	Safety and Security	-	N
5*	North Union Elementary	Other	S	N
6	Fenton Legion/ Community Center	Food, Water, and Shelter	S	N
7	Fenton EMS	Safety and Security	S	N
8	St. John's Lutheran	Food, Water, and Shelter	S	N
9	Fenton United Methodist	Food, Water, and Shelter	S	N
10	Alert Siren	Communication	-	N
11	Fenton LP Plant	Hazardous Material	-	N
12	Fenton Water Plant	Hazardous Material	-	N
13	StateLine Cooperative - Fenton Facility	Hazardous Material	-	N

Source: Local Planning Team, E-Plan⁷⁷

*Community Lifeline located outside of map viewing area.

77 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure FEN.4: Community Lifelines



Transportation

Fenton's major transportation routes include State Highway 15 and County Road B19. The most traveled route is Highway 15 with an average of 800 vehicles daily, 178 of which are trucks.⁷⁸ Fenton has no rail lines traveling through the community and no airport nearby.⁷⁹ Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. According to the National Pipeline Mapping System, there are no gas transmission pipelines or hazardous liquid pipelines that travel near community.⁸⁰

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are three chemical storage sites within or near Fenton that contain hazardous materials (listed in Table FEN.5). The planning team indicated that chemicals such as chlorine and anhydrous ammonia are regularly transported along local routes. The team noted that no significant chemical spills have happened in Fenton.

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of October 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Table FEN.7: Fenton Parcel Improvements and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
215	\$8,281,353	0	-	-

Source: County Assessor, 2023

Table FEN.8: Fenton Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
215	\$8,281,353	0	-	-

Source: County Assessor, 2023

Table FEN.9: Fenton Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000A	3/20/2018	Flood Insurance Study

Source: FEMA Flood Map Service Center⁸¹

78 Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

79 Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023. <https://iowadot.gov/aviation/airport-information>.

80 National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

81 Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Severe Thunderstorms (includes Hail & Lightning)

Severe thunderstorms are a regular part of the climate and weather in the Midwest. These storms can cause damage through heavy rain, lightning strikes, hail, and high winds. The NCEI reports seven instances of severe thunderstorms that occurred in Fenton from 1996 to January 2023. These storm events resulted in \$100,000 in property damage, with no injuries or deaths. Some impacts from severe thunderstorms include damage to trees, powerlines, and power outages. The local planning team cited vulnerabilities such as power loss and damage to homes and people. The city has completed projects to reduce its risk in recent years, such as implementing early warning systems, removing trees, and installing pumps. Additional ash tree removal is needed in the future.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for Fenton. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. Past impacts to Fenton include a major ice storm in 2017, power outages, and transportation issues. The local planning team selected this hazard as a top concern to due possible damage, restricted transportation, and emergency vehicle accessibility. The city recently repaired its snow removal equipment and would like to replace equipment in the future.

Tornado and Windstorm

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and no tornadoes in Fenton. The local planning team indicated that the Derecho in December 2021 resulted in roof damage, downed trees, and a power outage. The city recently added an alert siren to reduce risk to this hazard. Removal of ash trees is needed in the future.

Mitigation Strategy

Completed Mitigation and Strategic Actions

Mitigation Action	Wastewater System Improvements
Description	Construct, retrofit, or maintain wastewater infrastructure to ensure its proper functioning.
Hazard(s)	Flooding, Human Infectious Disease, Infrastructure Failure
Status	Wastewater system improvements were made in the last five years.

Mitigation Action	Amend Floodplain Regulations to Remain in NFIP
Description	Recently, FEMA and IDNR completed an update to the Kossuth County flood insurance rate maps (FIRMs). To maintain good standing with the NFIP, the city must amend floodplain regulations to reference the effective date of the new maps, which is 3/20/2018.
Hazard(s)	Flooding
Status	The city adopted the current effective map in 2023.

Mitigation Action	Alert/Warning Siren
Description	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens, where needed, with remote activation options.
Hazard(s)	Tornado and Windstorm
Status	This has been completed.

New Mitigation and Strategic Actions

Mitigation Action	Ash Tree Removal
Description	Remove ash trees within the city to mitigate against Emerald Ash Borer and falling trees/branches on people and/or infrastructure.
Hazard(s)	Animal & Plant Disease, Severe Thunderstorms, Severe Winter Storms, Tornado & Windstorm
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Mayor
Status	Project on hold due to limited funding.

Mitigation Action	Replace/Upgrade Snow Removal Equipment
Description	Replace/Upgrade snow removal equipment
Hazard(s)	Severe Winter Storms
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	EMA, Mayor
Status	Project on hold due to limited funding.

Continued Mitigation and Strategic Actions

Mitigation Action	Emergency Management Plans
Description	Develop/update/publicize emergency management plans, including preparedness, response recover, operations, long term recovery, and mitigation plans and maintain data inventory
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Low
Lead Agency/Department	EMA, Mayor
Status	Project on hold due to limited funding.

Mitigation Action	Stormwater System and Drainage Improvements
Description	Drainage improvements may include ditch upsizing, ditch cleanout, and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates. Cleanout and reshaping of channel segments at bridge crossings can increase conveyance and reduce flooding potential.
Hazard(s)	Flooding, Infrastructure Failure
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	Mayor, EMA
Status	Project on hold due to limited funding.

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Local Public Safety
Status	Project on hold due to limited funding.

Mitigation Action	Heating/Cooling Centers
Description	Build or designate dedicated heating and cooling centers/shelters
Hazard(s)	Extreme Temperatures
Estimated Cost	\$10,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	Project on hold due to limited funding.

Mitigation Action	Enhance Security Measures
Description	Install and maintain security measures at all critical facilities.
Hazard(s)	Terrorism and Civil Unrest
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	Mayor, EMA
Status	Project on hold due to limited funding.

Mitigation Action	Emergency Response Training
Description	Conduct training for emergency response personnel.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$2,000+
Local Funding Source	City General Fund
Timeline	1 year
Priority	High
Lead Agency/Department	Mayor, EMA
Status	Training occurs regularly.

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, City Council
Status	One generator was purchased. City looking to purchase/fund additional.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the City Council. The plan will be reviewed and updated annually. The public will be involved in the review and revision process through City Council meetings.

Community Profile

City of Lakota

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table LAK.1: Lakota Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Debra Steven	City Council Member	City of Lakota	Round 1 & 2
Royce Janssen	City Council Member	City of Lakota	-
Pam Ahlstrom	City Clerk/Treasurer	City of Lakota	-
Sue Kearney	Assistant City Clerk	City of Lakota	-

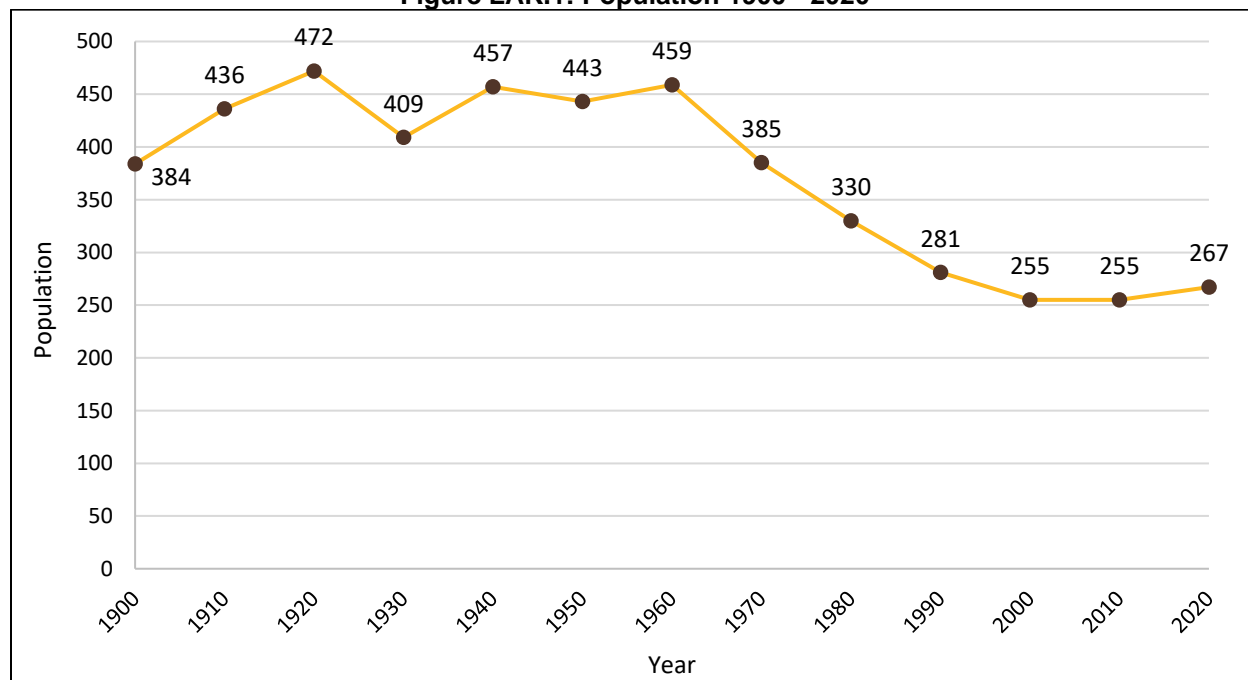
Location and Geography

The City of Lakota is located in northeast Kossuth County and covers an area of 0.19 square miles. The main waterway in the area is the Middle Branch Blue Earth River, which runs two miles northeast of Lakota. The Union Slough National Wildlife Refuge is approximately five miles south of the city.

Demographics

Lakota's estimated population in 2021 was 309. The following figure displays the historical population trend from 1900 to 2020. This figure indicates that the population of Lakota decreased from 1960 to 2000 but has since seen a slight increase. Increasing populations are associated with more robust hazard mitigation and emergency planning requirements for development. Growing populations can also increase tax revenues, allowing communities to pursue additional mitigation projects. Lakota's population accounted for 2.1% of Kossuth County's population in 2021.⁸²

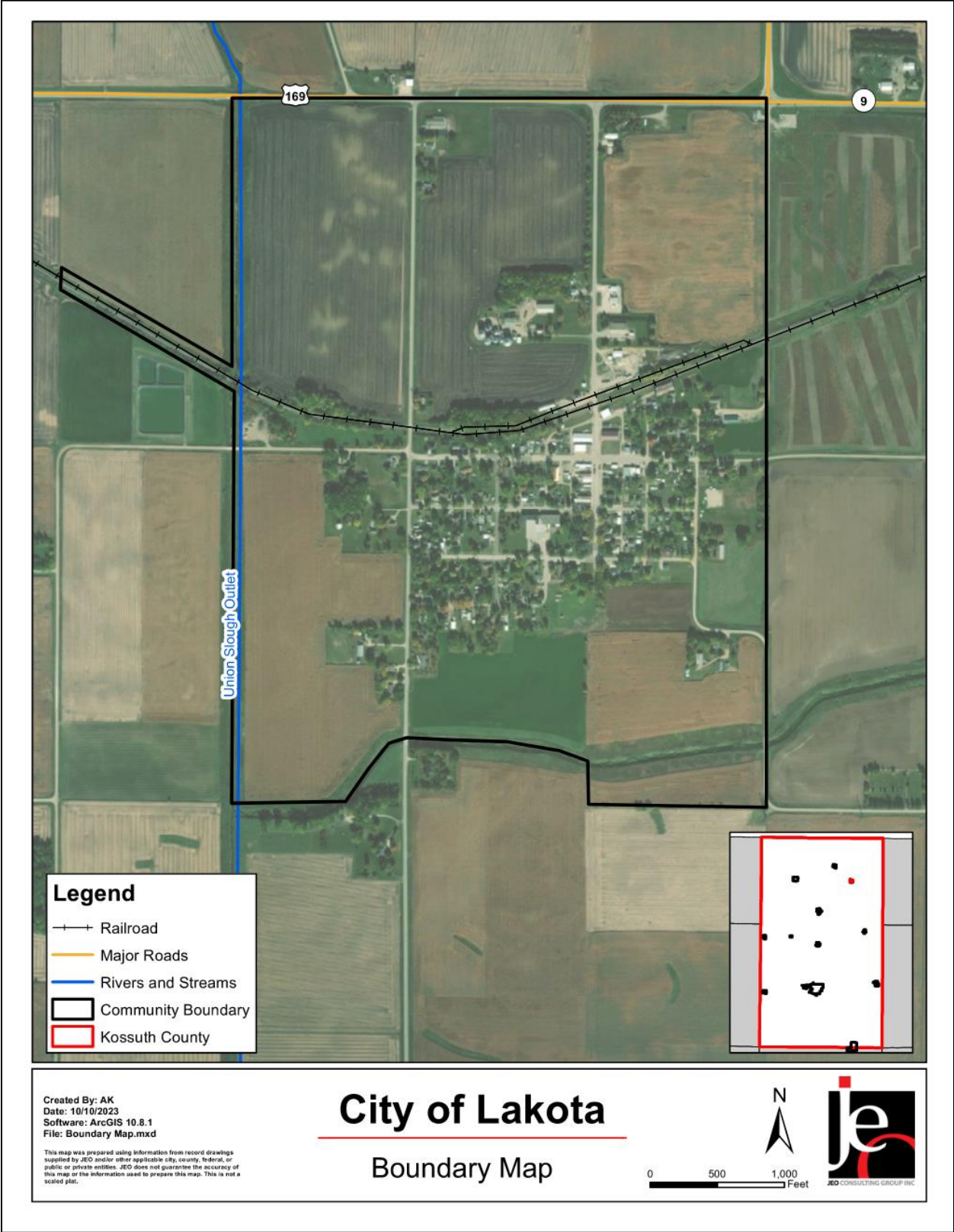
Figure LAK.1: Population 1900 - 2020



Source: U.S. Census Bureau

82 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Figure LAK.2: City of Lakota

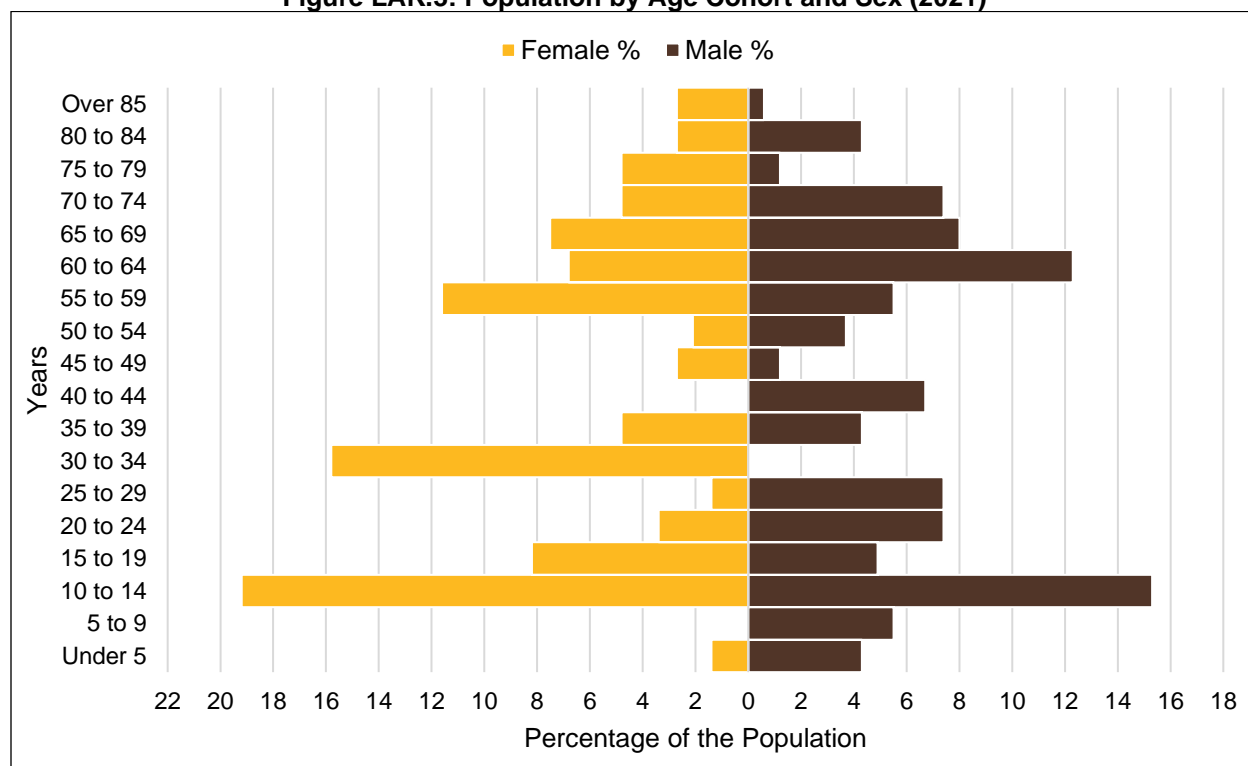


Section Seven: City of Lakota Community Profile

The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Lakota's population:

- **3.9% is non-white.** Since 2010, Lakota became less racially diverse. In 2010, 5.9% of the Lakota's population was non-white. By 2021, 3.9% was non-white.⁸³
- **Median age of 38.6.** The median age of Lakota was 38.6 years old in 2021. The population became younger since 2010, when the median age was 46.4.⁸⁴

Figure LAK.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau⁸⁵

The figure above shows Lakota's population percentage broken down by sex and five-year age groups. Lakota's population is spread fairly evenly throughout age groups. This indicates that the population is likely to remain stable in the future.

83 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

84 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

85 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Lakota's population has:

- **25.9% of people living below the poverty line.** The poverty rate (25.9%) in the City of Lakota was higher than the state's poverty rate (11%) in 2021.⁸⁶
- **\$65,000 median household income.** Lakota's median household income in 2021 (\$65,000) was \$429 lower than the state (\$65,429).⁸⁷
- **11% unemployment rate.** In 2021 Lakota had a higher unemployment rate (11%) when compared to the state (3.9%).⁸⁸
- **33.9% of workers commuted 30 minutes or more to work.** Fewer workers in Lakota commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (33.9% compared to 39.5%).⁸⁹

Major Employers

Major employers in Lakota include:

- Valero Renewable Fuels
- Farmers Trust and Savings Bank
- Patriot Bar and Grill
- Stateline Cooperative – Lakota
- City of Lakota

According to the local planning team, a large percentage of residents commute to other communities for work, such as Buffalo Center, Forest City, Burt, Algona, Swea City, and Blue Earth, Minnesota.

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Lakota's housing stock has:

86 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

87 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

88 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

89 United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

Section Seven: City of Lakota Community Profile

- **84% of housing built prior to 1970.** Lakota has a larger share of housing built prior to 1970 than the state (87% compared to 49.9%).⁹⁰
- **8.5% of housing units vacant.** Lakota has a lower vacancy rate (8.5%) compared to the rest of the state (9.3%).⁹¹
- **0.8% mobile and manufactured housing.** The City of Lakota has a smaller share of mobile and manufactured housing (0.8%) compared to the state (3.5%).⁹²
- **22% renter-occupied.** The rental rate of Lakota was 22% in 2021. This is lower than the state's rate of 28.4%.⁹³

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **72% of households have a broadband internet subscription.** Lakota has a smaller share of households with broadband (72%) compared to the state (84.9%).⁹⁴

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Lakota has a mayor, a five-member city council, and the following offices.

- Clerk/Treasurer
- Assistant City Clerk
- Fire Chief
- Wastewater Plant Superintendent
- Water/Sewer Superintendent
- Solid Waste Superintendent
- Street Superintendent
- Library Board Chairperson
- Parks Superintendent

Capability Assessment

The planning team assessed the City of Lakota's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following

90 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

91 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

92 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

93 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

94 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects. The planning team indicated that a large portion of funds is currently dedicated to a sewer and water plant.

Table LAK.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	No
	Economic Development Plan	No
	Emergency Operations Plan	No
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	No
	Subdivision Regulation/Ordinance	No
	Floodplain Ordinance	No
	Building Codes	No
	Source Water Protection Plan	Yes
	Water System Emergency Response Plan	No
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	No
	Floodplain Administration	No
	GIS Capabilities	No
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	No
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No
	Other (if any)	

Survey Components/Subcomponents		Yes/No
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

National Flood Insurance Program (NFIP)

The initial Flood Insurance Rate Map (FIRM) for Lakota was delineated on 3/20/2018, which is also the current effective map date. Lakota is currently applying to be part of the National Flood Insurance Program.

Table LAK.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Community support to implement projects	Moderate
Time to devote to hazard mitigation	Limited
Ability to expand and improve identified capabilities to achieve mitigation	Limited

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Lakota, is Relatively Low (56.35). The average for the State of Iowa is 43.31.⁹⁵

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources, and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often

⁹⁵ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can function as proxies for community capacity. The following table lists the components and scores for the City of Lakota compared to the county.

Table LAK.4: Rural Capacity Index

Components of Index	City of Lakota	Kossuth County
County is Metropolitan?	No	No
Has a Head of Planning?	No	Yes
Has a College or University?	No	No
Adults with Higher Education:	6%	18%
Families Below Poverty Level:	17%	7%
Households with Broadband:	68%	78%
People without Health Insurance:	6%	5%
Voter Turnout:	80%	80%
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	73	-2,350
Overall Rural Capacity Index Score (0-100)	44	66

Source: Headwaters Economics⁹⁶

Plan Integration

Lakota has limited planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the city updates these planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

The City of Lakota's funds are currently limited to maintaining current facilities and municipal systems. A large portion of municipal funds have been dedicated to a new sewer system. The amount of municipal funds has generally decreased in recent years. The city was awarded CDBG funding for a new sewer system.

Wellhead Protection Plan

The purpose of wellhead protection plans is to protect the public drinking water supply wells from contamination. It includes identifying potential sources of groundwater contamination in the area.

⁹⁶ Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.
<https://headwaterseconomics.org/equity/rural-capacity-map/>.

Future Development Trends

In the last five years, a small number of buildings were demolished due to their poor state. No new structures were developed in the floodplain or other hazardous areas. According to the local planning team, no new housing or commercial developments are planned for the next five years. The city's overall vulnerability may have been reduced by the demolition of dilapidated buildings.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communications; Transportation; and Hazardous Material facilities.



Table LAK.5: Community Lifelines

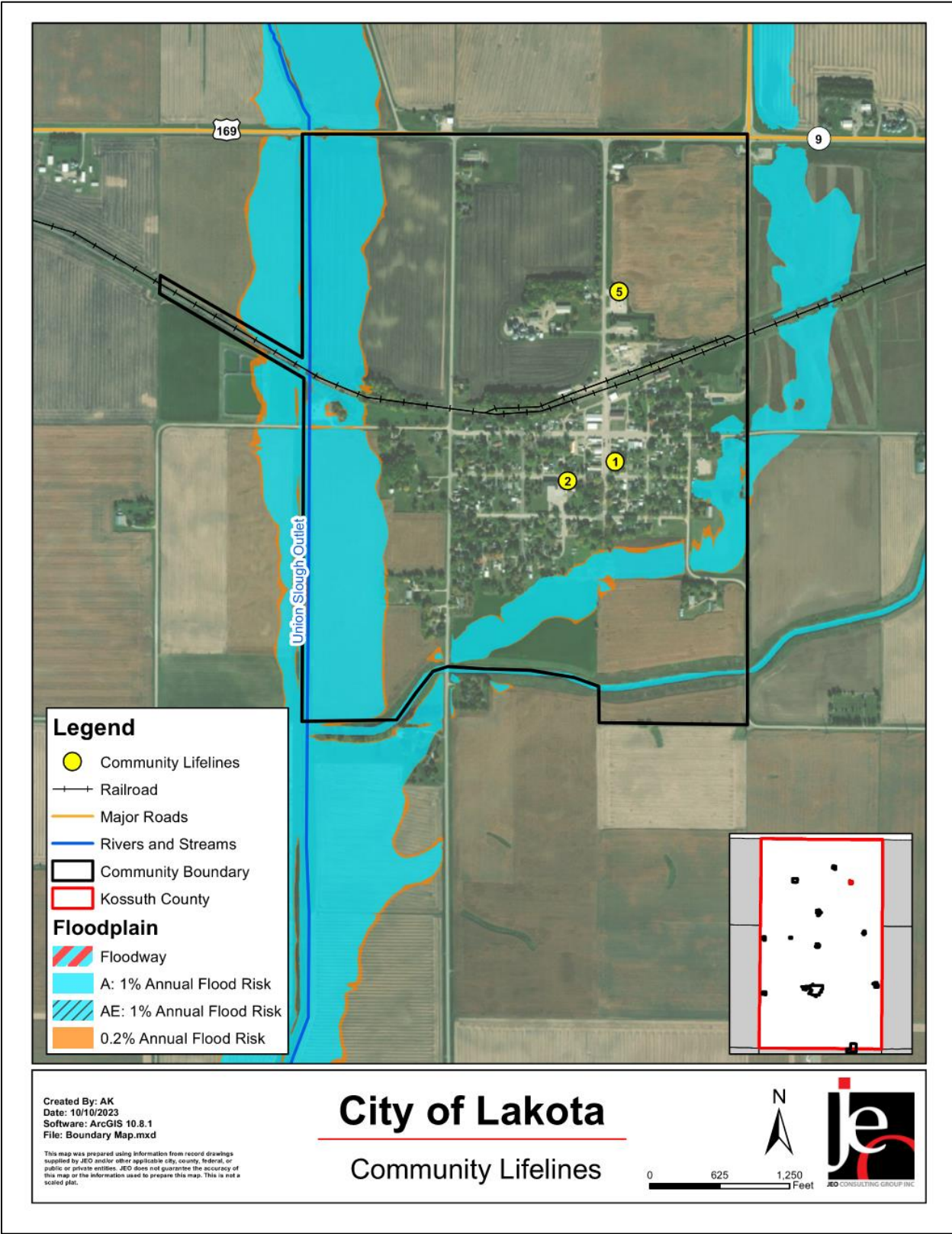
CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	Lakota Community Center	Food, Water, and Shelter	S	N
2	Lakota Eagle Center	Food, Water, and Shelter	S	N
3*	Air Products CO2 facility at Valero	Hazardous Material	-	N
4*	ITC BISON	Hazardous Material	-	N
5	Lakota Bulk Plant	Hazardous Material	-	N
6*	StateLine Cooperative - Lakota Facility	Hazardous Material	-	N
7*	Valero Renewable Fuels Company, LLC dba Valero Lakota Plant	Hazardous Material	G	N

Source: Local Planning Team, E-Plan⁹⁷

*Community Lifeline located outside of map viewing area.

97 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure LAK.4: Community Lifelines



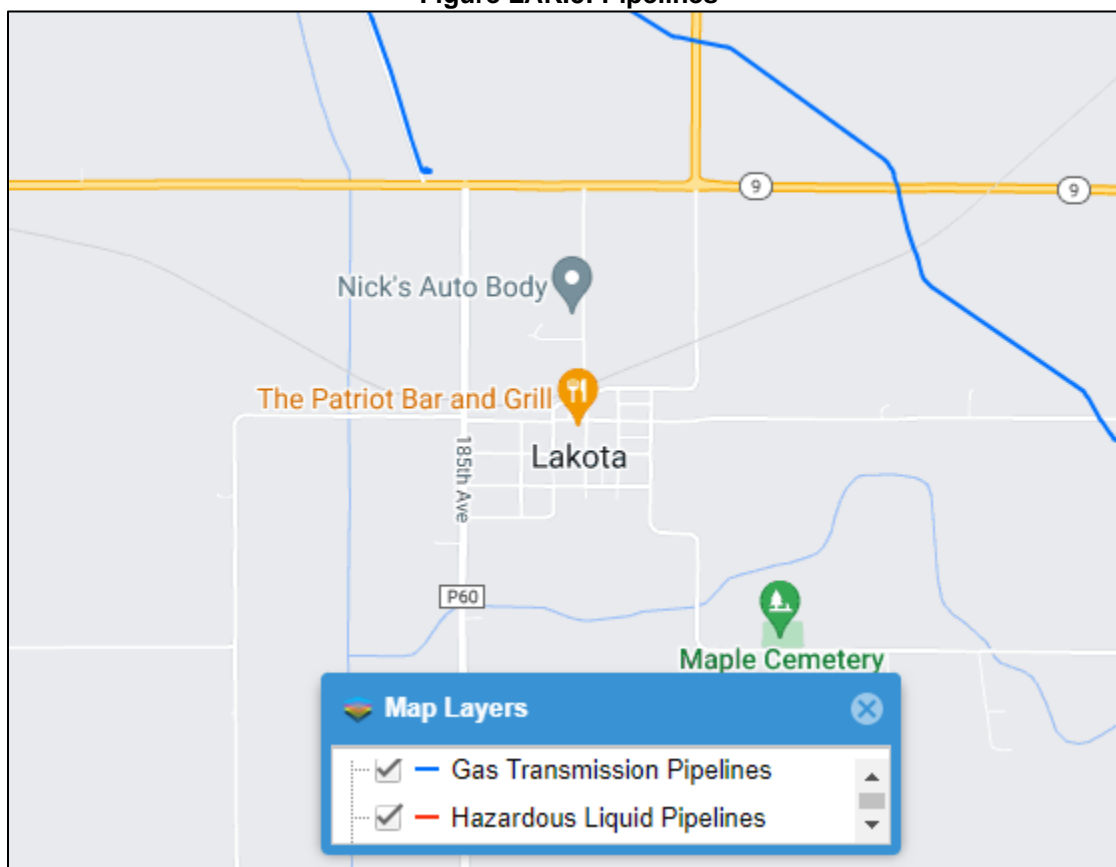
Transportation

Lakota's major transportation routes include U.S. Highway 169 and State Highway 9. The most traveled route is Highway 9 with an average of 2,050 vehicles daily, 573 of which are trucks.⁹⁸ Lakota has a Union Pacific line that travels east-west through the community and no airport nearby.⁹⁹ No significant transportation events have occurred locally, according to the local planning team. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. There are two gas transmission pipelines that travel near Lakota. These can be seen on Figure LAK.5. The planning team indicated that chemicals such as anhydrous ammonia, ethanol, CO₂, and various fuels are regularly transported along local routes. The team noted that no significant chemical spills have happened in Lakota.

Figure LAK.5: Pipelines



Source: National Pipeline Mapping System¹⁰⁰

98 Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

99 Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023. <https://iowadot.gov/aviation/airport-information>.

100 National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are five chemical storage sites within or near Lakota that contain hazardous materials (listed in Table LAK.5).

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of October 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Table LAK.6: Lakota Parcel Improvements and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
170	\$7,034,951	7	\$214,805	4%

Source: County Assessor, 2023

Table LAK.7: Lakota Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
170	\$7,034,951	7	\$190,739	4%

Source: County Assessor, 2023

Table LAK.8: Lakota Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000A	3/20/2018	Flood Insurance Study

Source: FEMA Flood Map Service Center¹⁰¹

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Flooding

According to the NCEI, there were no reported flood events in Lakota from 1996 to January 2023. The local planning team indicated that the community has a high water table due to artesian wells in the area. The high water table can lead to water in basements during heavy rain events.

101 Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

Section Seven: City of Lakota Community Profile

Additionally, the city baseball field floods regularly and waters sometimes reach the storage shed. The city would like to look into more projects that can reduce flooding in the area and noted that a storm sewer project would help.

Lakota is not currently a member of the NFIP but has started the application process. As of September 30, 2022, there are no NFIP policies in-force for the city. Lakota does not currently have any repetitive loss or severe repetitive loss structures.

According to the Risk Factor website, Lakota has a minor risk of flooding, with 21 properties and one mile of road having a greater than 26% chance of being severely affected by flooding over the next 30 years. That risk is unlikely to change in the next 30 years.¹⁰²

Hazardous Materials Release

The local planning team is concerned about an ethanol explosion and/or fire from a hazardous materials release at the local Valero ethanol plant. A power outage increases risk of such an event and the planning team noted that a backup generator would reduce such risk. Nearby structures and homes are at greater risk during an explosion or fire at the ethanol plant due to their aging structure. The planning team said that updated equipment and turnout gear at the fire department would also reduce the community's risk during such an event.

Severe Thunderstorms (includes Hail & Lightning)

Severe thunderstorms are a regular part of the climate and weather in the Midwest. These storms can cause damage through heavy rain, lightning strikes, hail, and high winds. The NCEI reports 15 instances of severe thunderstorm events that occurred in Lakota from 1996 to January 2023. The local planning team noted that a severe storm came through the city in July 2022 and caused over \$90,000 in damage. Hail and high winds damaged trees, flag poles, fencing, windows, vehicles, and the shelter house.

This hazard is especially concerning to the planning team due to the lack of adequate warning that goes along with some of these storms that are too low for the radar to pick up. The city is working with Kossuth County Emergency Management with its plan to acquire low radar capabilities in the county due to the terrain.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for Lakota. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. Past impacts include downed trees and power lines, power loss, stranded travelers, and dangerous road conditions. The planning team indicated that the city needs updated equipment for housing stranded people, such as backup generators and new cots.

Tornado and Windstorm

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and no tornadoes in Lakota. The local planning team cited previous windstorm damage to the city park, trees, park shelter, flag poles, city museum, and fencing. The planning team is concerned

¹⁰² Risk Factor. "Flood Factor: Lakota, Iowa". Accessed October 2023. https://riskfactor.com/city/lakota-ia/1942825_fsid/flood.

about lack of warning for low moving storms that are not detected by radar. The city is currently working with county emergency management on projects to help with advance warnings for such storms.

Mitigation Strategy

Continued Mitigation and Strategic Actions

Mitigation Action	Emergency Management Plans
Description	Develop/update/publicize emergency management plans, including preparedness, response recover, operations, long term recovery, and mitigation plans and maintain data inventory
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Mayor
Status	In progress

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Public Safety
Status	Occurs on a regular basis. Partner with fire department.

Mitigation Action	Stormwater and Drainage Improvements
Description	Drainage improvements may include ditch upsizing, ditch cleanout, and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates. Cleanout and reshaping of channel segments at bridge crossings can increase conveyance and reduce flooding potential.
Hazard(s)	Flooding, Infrastructure Failure
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	EMA, Mayor
Status	Not started

Mitigation Action	Wastewater System Improvements
Description	Construct, retrofit, or maintain wastewater infrastructure to ensure its proper functioning.
Hazard(s)	Flooding, Human Infectious Disease, Infrastructure Failure
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	1 year
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	Currently working on this project and striving meet the guidelines of the government and the DNR.

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited funding.

Mitigation Action	Heating/Cooling Centers
Description	Build or designate dedicated heating and cooling centers/shelters
Hazard(s)	Extreme Temperatures
Estimated Cost	\$10,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	High
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited funding.

Mitigation Action	Enhance Security Measures
Description	Install and maintain security measures at all critical facilities.
Hazard(s)	Terrorism and Civil Unrest
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	County Sheriff installed cameras in the city, but more measures needed.

Mitigation Action	Emergency Response Training
Description	Conduct training for emergency response personnel
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Fire Department
Status	This project is on hold due to limited funding.

Mitigation Action	Preserve Natural and Beneficial Floodplain Functions
Description	Preserve natural and beneficial functions of floodplain land through measures such as: retaining natural vegetation, restoring streambeds, and preserving open space in the floodplain.
Hazard(s)	Flooding
Estimated Cost	\$10,000
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited funding.

Mitigation Action	Emergency Shelter
Description	Construct a shelter for use during power outage and/or flood event. There is currently nowhere for people to go.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	EMA, Fire Department
Status	Not started due to limited funding.

Mitigation Action	Water Tower
Description	Upgrade or replace the current 100 year old water tower.
Hazard(s)	Drought, Extreme Temperatures, Human Infectious Diseases, Infrastructure Failure, Grass/Wildfire
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Medium
Lead Agency/Department	City Clerk
Status	In the beginning planning stages.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the City Council. The plan will be reviewed and updated bi-annually. The public will be involved in the review and revision process through utility bill notices, social media, public notice flyer, and city council meetings.

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Community Profile

City of Ledyard

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table LED.1: Ledyard Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Sharon Hackenmiller Cowin	Mayor	City of Ledyard	-
Bob Gilbertson	City Council Member	City of Ledyard	Round 1 & 2

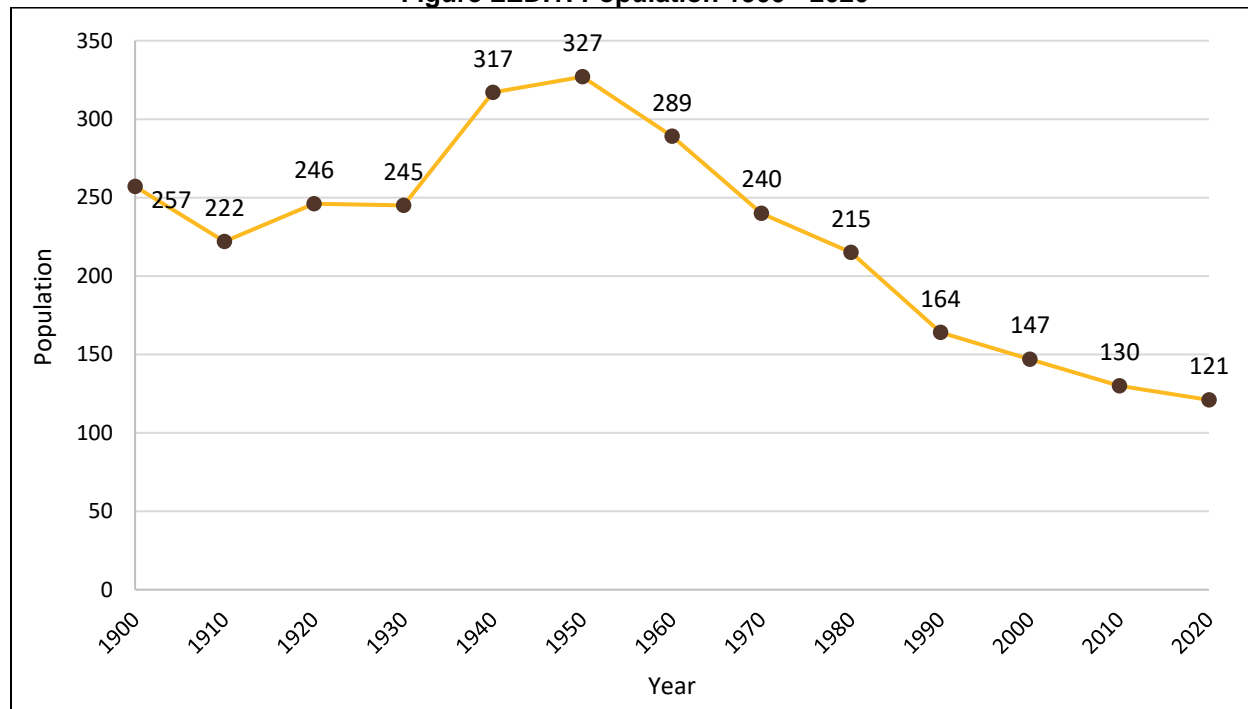
Location and Geography

The City of Ledyard is located in north central Kossuth County and covers an area of 0.33 square miles. The main waterway in the area is the West Branch Blue Earth River, which runs about two miles west and northwest of the city.

Demographics

Ledyard's estimated population in 2021 was 94. The following figure displays the historical population trend from 1900 to 2020. This figure indicates that the population of Ledyard has declined since 1950. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which can make implementation of mitigation projects fiscally challenging. Ledyard's population accounted for 0.6% of Kossuth County's population in 2021.¹⁰³

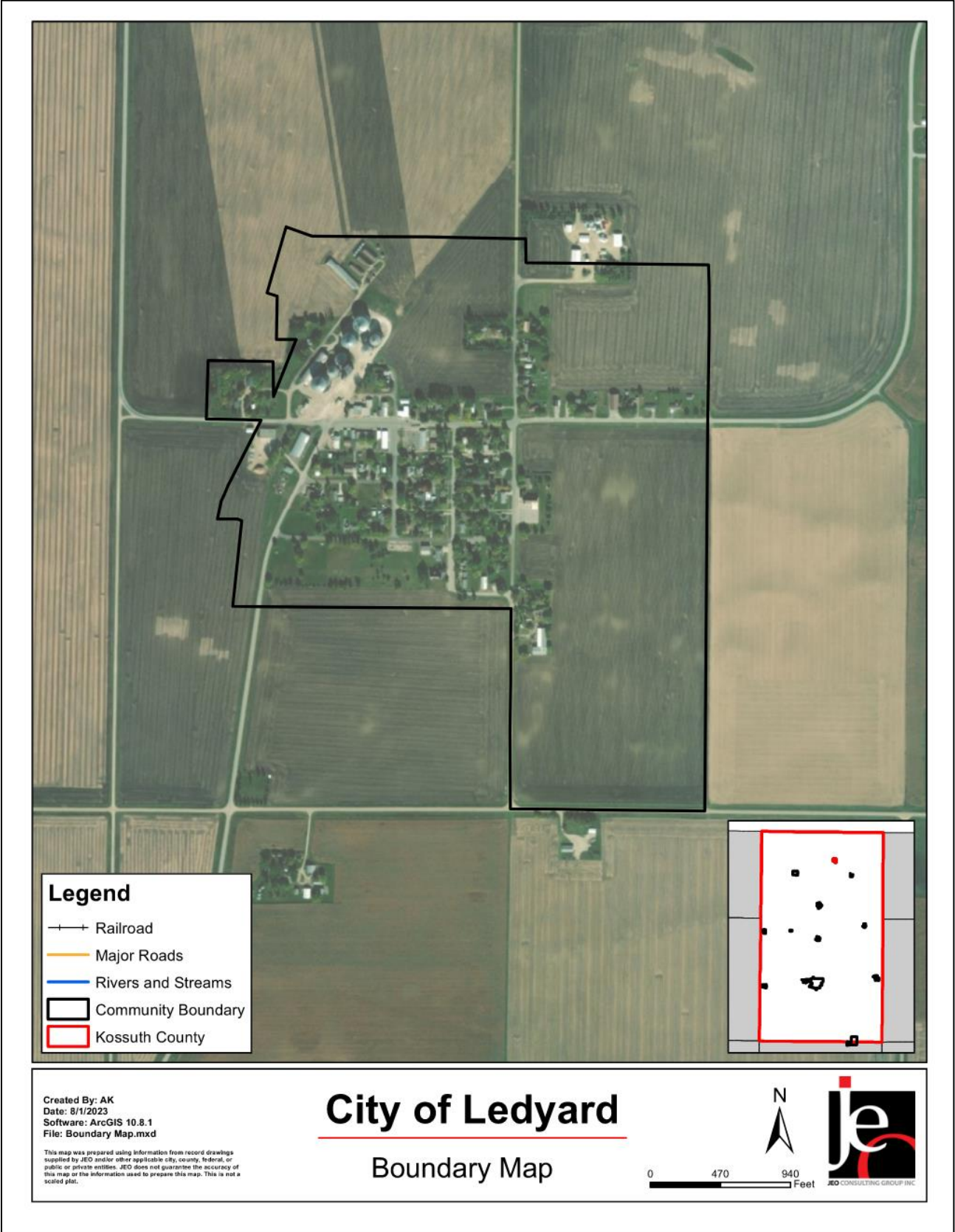
Figure LED.1: Population 1900 - 2020



Source: U.S. Census Bureau

103 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Figure LED.2: City of Ledyard

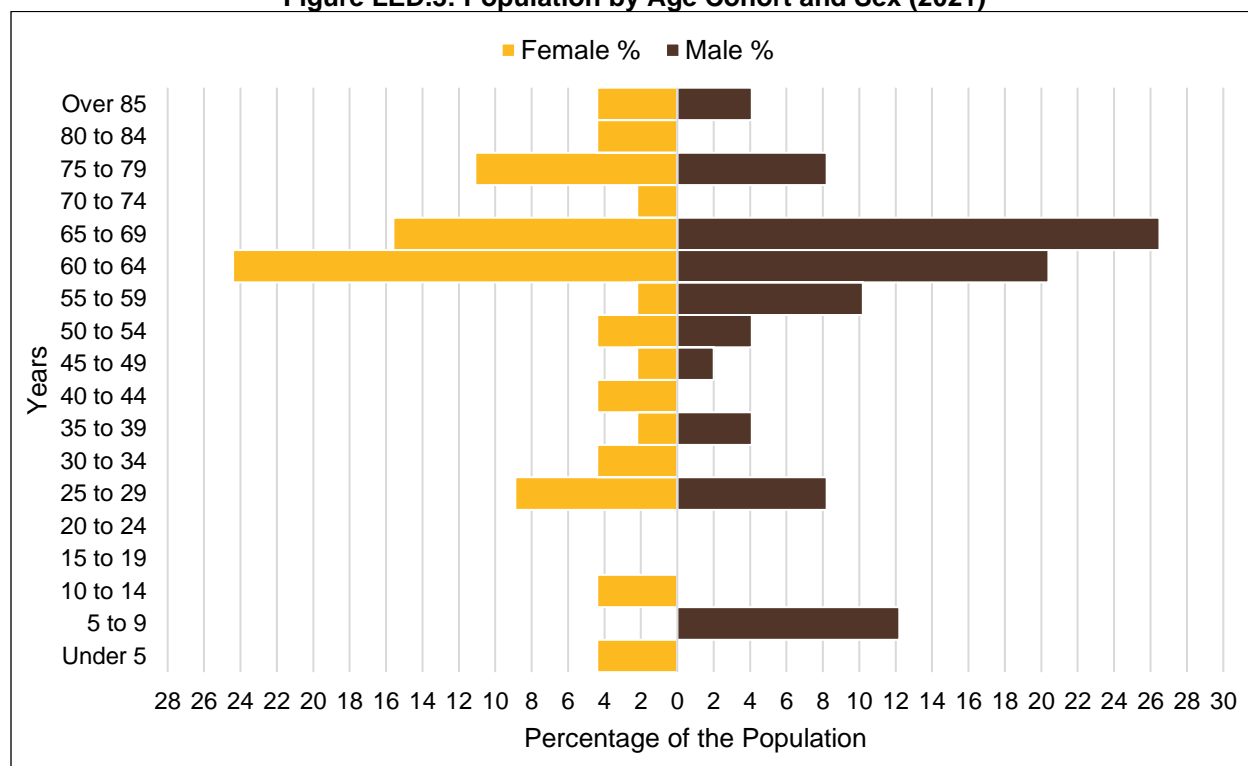


Section Seven: City of Ledyard Community Profile

The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Ledyard's population:

- **9.6% is non-white.** Since 2010, Ledyard became more racially diverse. In 2010, 0.8% of the Ledyard's population was non-white. By 2021, 9.6% was non-white.¹⁰⁴
- **Median age of 63.1.** The median age of Ledyard was 63.1 years old in 2021. The population became older since 2010, when the median age was 49.3.¹⁰⁵

Figure LED.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau¹⁰⁶

The figure above shows Ledyard's population percentage broken down by sex and five-year age groups. Ledyard's population is top heavy. This suggests future population decline as older generations are replaced by fewer younger residents.

104 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

105 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

106 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Ledyard's population has:

- **0% of people living below the poverty line.** The poverty rate (0%) in the City of Ledyard was lower than the state's poverty rate (11%) in 2021.¹⁰⁷
- **\$35,625 median household income.** Ledyard's median household income in 2021 (\$35,625) was \$29,804 lower than the state (\$65,429).¹⁰⁸
- **0% unemployment rate.** In 2021 Ledyard had a lower unemployment rate (0%) when compared to the state (3.9%).¹⁰⁹
- **37.3% of workers commuted 30 minutes or more to work.** More workers in Ledyard commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (37.3% compared to 37.2%).¹¹⁰

Major Employers

Major employers in Ledyard include Stateline Co-op, Bank Plus, Valero, and the Kossuth County Roads Department. According to the planning team, a large percentage of residents commute to other cities for work, such as Swea City, Forest City, and Bancroft.

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Ledyard's housing stock has:

- **78.8% of housing built prior to 1970.** Ledyard has a greater share of housing built prior to 1970 than the state (78.8% compared to 49.9%).¹¹¹
- **26.7% of housing units vacant.** Ledyard has a higher vacancy rate (26.7%) compared to the rest of the state (9.3%).¹¹²

107 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

108 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

109 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

110 United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

111 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

112 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

Section Seven: City of Ledyard Community Profile

- **4% mobile and manufactured housing.** The City of Ledyard has a greater share of mobile and manufactured housing (4%) compared to the state (3.5%).¹¹³
- **14.5% renter-occupied.** The rental rate of Ledyard was 14.5% in 2021. This is lower than the state's rate of 28.4%.¹¹⁴

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **56.4% of households have a broadband internet subscription.** Ledyard has a smaller share of households with broadband (56.4%) compared to the state (84.9%).¹¹⁵

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Ledyard has a mayor, a five-member city council, and the following offices.

- Clerk/Treasurer
- Attorney (on call)
- Fire Chief
- Water/Sewer Superintendent

Capability Assessment

The planning team assessed the City of Ledyard's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Table LED.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	No
	Economic Development Plan	No
	Emergency Operations Plan	Yes
	Floodplain Management Plan	No

113 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

114 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

115 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

Survey Components/Subcomponents		Yes/No
	Storm Water Management Plan	No
	Zoning Ordinance	No
	Subdivision Regulation/Ordinance	No
	Floodplain Ordinance	No
	Building Codes	Yes
	Source Water Protection Plan	No
	Water System Emergency Response Plan	No
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	No
	Floodplain Administration	No
	GIS Capabilities	No
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	No
	Mutual Aid Agreement	No
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	No
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	No
	Gas/Electric Service Fees	Yes
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

The local planning team indicated that the city does not participate in the National Flood Insurance Program (NFIP) due to the absence of major historical flooding.

Table LED.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Community support to implement projects	Limited
Time to devote to hazard mitigation	Limited
Ability to expand and improve identified capabilities to achieve mitigation	Limited

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Ledyard, is Relatively Low (56.35). The average for the State of Iowa is 43.31.¹¹⁶

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources, and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can function as proxies for community capacity. The following table lists the components and scores for the City of Ledyard compared to the county.

Table LED.4: Rural Capacity Index

Components of Index	City of Ledyard	Kossuth County
County is Metropolitan?	No	No
Has a Head of Planning?	No	Yes
Has a College or University?	No	No
Adults with Higher Education:	10%	18%
Families Below Poverty Level:	0%	7%
Households with Broadband:	38%	78%

¹¹⁶ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

Components of Index	City of Ledyard	Kossuth County
People without Health Insurance:	0%	5%
Voter Turnout:	80%	80%
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	-70	-2,350
Overall Rural Capacity Index Score (0-100)	38	66

Source: Headwaters Economics¹¹⁷

The local planning team indicated that the city applied to participate in the NFIP in 2023. As of February 2024, it is not yet a participating member.

Plan Integration

Ledyard has limited planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the city updates these planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

The City of Ledyard's funds are currently limited to maintaining current facilities and municipal systems. The amount of municipal funds has decreased in recent years. The city was awarded Duke Energy grant in the last five years.

Building Codes (2009)

The building code sets standards for constructed buildings and structures. These codes regulate and govern the conditions and maintenance of all property, buildings, and structures by providing the standards for supplied utilities, facilities, and other physical things and conditions essential to ensure that structures are safe, sanitary, and fit for occupation and use.

Future Development Trends

In the last five years, the city has experienced population loss and an aging population. There was no new residential or commercial development, according to the local planning team. There are currently no plans for new developments in the next five years. The city's overall vulnerability has not been affected by changes in development.

¹¹⁷ Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.
<https://headwaterseconomics.org/equity/rural-capacity-map/>.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communication; Transportation; and Hazardous Material facilities.



Table LED.5: Community Lifelines

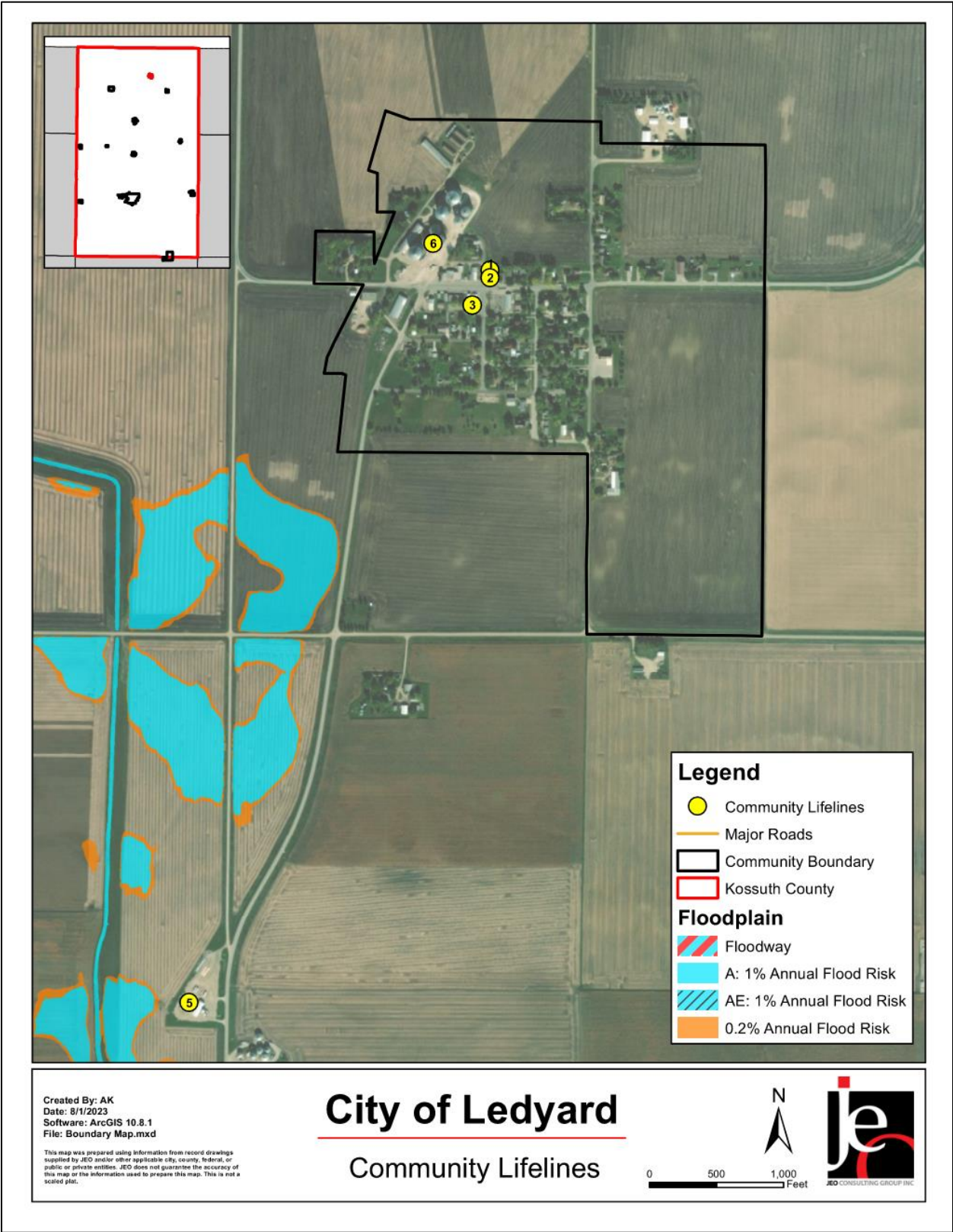
CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	Alert Siren	Communication	-	N
2	Fire Hall	Safety and Security	-	N
3	Library/Legion Hall/ Community Building	Food, Water, and Shelter	S	N
4*	ITC Midwest Ledyard	Hazardous Material	-	N
5	StateLine Cooperative - Ledyard Agronomy Facility	Hazardous Material	-	N
6	StateLine Cooperative - Ledyard Fuel	Hazardous Material	-	N

Source: Local Planning Team, E-Plan¹¹⁸

*Community Lifeline located outside of map viewing area.

118 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure LED.4: Community Lifelines

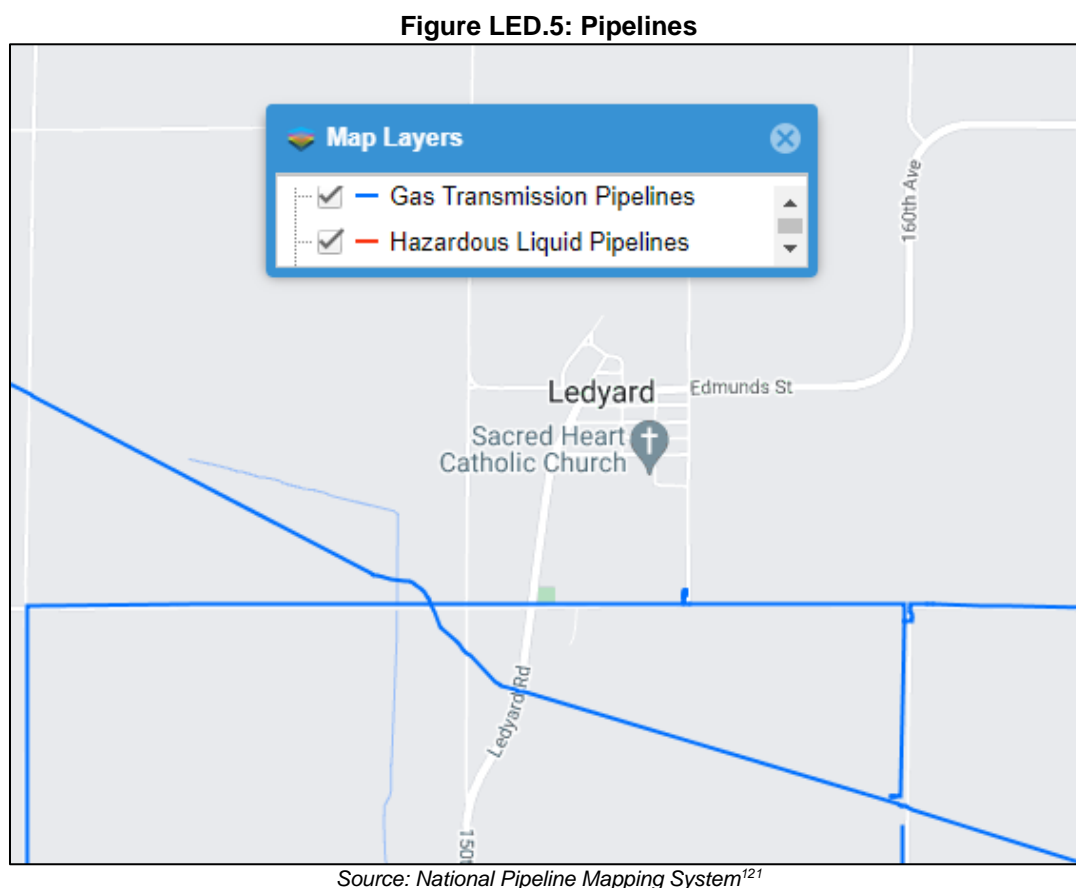


Transportation

Ledyard's major transportation routes include County Roads A30 and P50. The most traveled route is County Road P50 with an average of 360 vehicles daily.¹¹⁹ A Union Pacific rail line runs two miles south of the city, near U.S. Highway 169. There is no airport nearby.¹²⁰ No significant transportation events have occurred locally, according to the local planning team. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. There are multiple gas transmission pipelines that travel near the community. This can be seen on Figure LED.5.



According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are three chemical storage sites within or near Ledyard that contain hazardous materials (listed in Table LED.5). The planning team indicated that farm chemicals are regularly transported along local routes. The team noted that no significant chemical spills have happened in Ledyard.

119 Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

120 Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023.

<https://iowadot.gov/aviation/airport-information>.

121 National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of October 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Table LED.6: Ledyard Parcel Improvements and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
111	\$9,635,996	0	-	-

Source: County Assessor, 2023

Table LED.7: Ledyard Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
111	\$9,635,996	0	-	-

Source: County Assessor, 2023

Table LED.8: Ledyard Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000A	3/20/2018	Flood Insurance Study

Source: FEMA Flood Map Service Center¹²²

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Drought

Drought was chosen as a top hazard of concern due to the ongoing drought affecting the area and increased risk of fires. Impacts from the drought include farm equipment fires, farm field fires, and damaged crops. The local planning team indicated the city can implement water restrictions, if needed. The city has two wells with separate pumps and a water tower. The supply is gravity fed and water is metered. The city and local fire department are concerned about the fire department's water supply during drought.

¹²² Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

Grass and Wildland Fire

This hazard was identified as a top hazard due to the limited staffing and resources of the local fire department. According to the planning team, other fire departments automatically come for support in the event of a fire due to low local staffing. The local planning team is also concerned about having early notification of a grass/wildfire. It was noted that hazardous conditions around city structures are minimal.

Severe Thunderstorms (includes Hail & Lightning)

Severe thunderstorms are a regular part of the climate and weather in the Midwest. These storms can cause damage through heavy rain, lightning strikes, hail, and high winds. The NCEI reports eight instances of severe thunderstorms that occurred in Ledyard from 1996 to January 2023. These storm events resulted in \$40,000 in property damage, with no injuries or deaths. The local planning team indicated that past impacts include power outages, tree damage, and structural damage; however, no community lifelines have been damaged from severe thunderstorms. Approximately 10% of powerlines are currently buried underground. The community building and water plant are in need of backup generators.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for Ledyard. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. Past impacts include power loss, road closures, and EMS calls. Kossuth County handles snow removal in the city, which is considered sufficient.

Tornado and Windstorm

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and one tornado in Ledyard. The F2 tornado occurred on May 15, 1998, and tracked through the county, also hitting Algona. The event caused \$1,000,000 in property damage, with no injuries or deaths reported. According to the local planning team, impacts include tree and structural damage. The basement of the community building currently acts as a storm shelter for the community. Community lifelines do not have weather radios but do have pagers and phone notification.

Mitigation Strategy

New Mitigation and Strategic Actions

Mitigation Action	Drought Education Program
Description	Educate the public about the impacts of drought and how they can limit water usage and prioritize usage type to ensure citizens and the fire department have adequate water during times of drought.
Hazard(s)	Drought, Grass and Wildfire
Estimated Cost	\$2,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, City Council, Fire Department
Status	Not started

Mitigation Action	Fire Department Staffing and Resources
Description	Explore solutions to fire department staffing and resource needs. The fire department currently requires outside help for any fire response. Improved early wildfire notification and communication resources are also needed.
Hazard(s)	Grass and Wildfire
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, City Council, Fire Department
Status	Not started

Continued Mitigation and Strategic Actions

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines. One generator is currently located at the lift station.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, City Council
Status	Seeking estimates

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Public Safety
Status	This project is on hold due to limited funding.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the Mayor and a City Council Member. The plan will be reviewed and updated annually. The public will be involved in the review and revision process through website updates, public postings, and public meetings, as needed.

Community Profile

City of Lone Rock

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table LON.1: Lone Rock Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Randy Bollinger	City Council Member	City of Lone Rock	Round 1 & 2

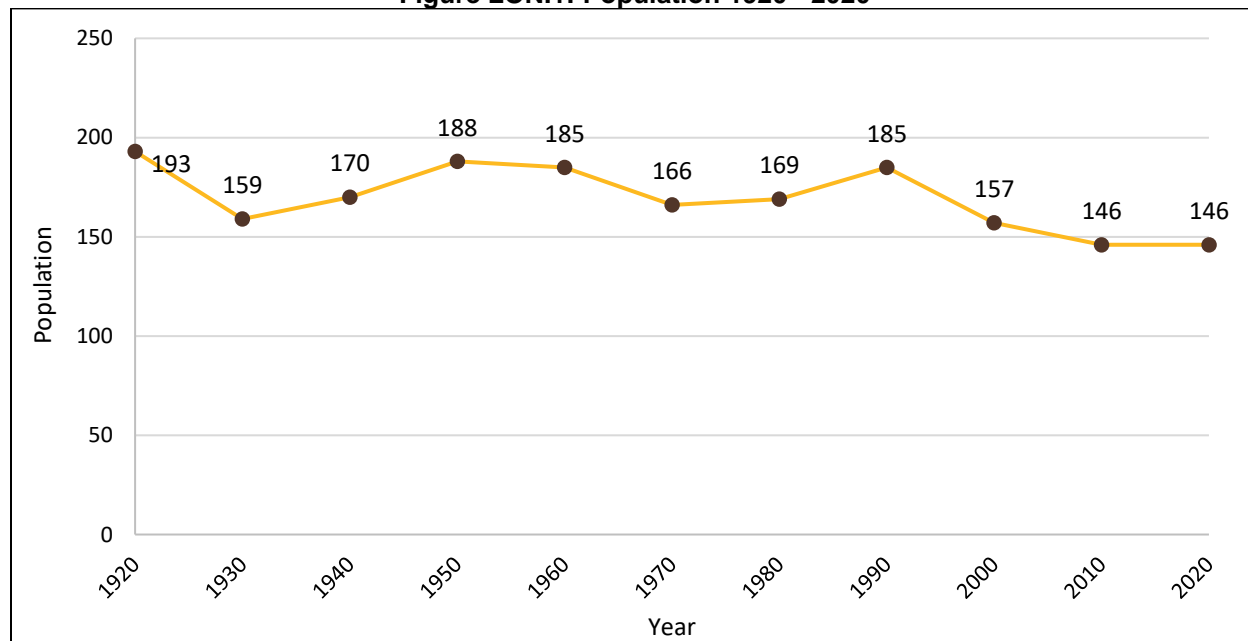
Location and Geography

The City of Lone Rock is located in west central Kossuth County and covers an area of 0.12 square miles. The main waterway in the area is Calamus Creek, which runs just north and east of the city.

Demographics

Lone Rock's estimated population in 2021 was 101. The following figure displays the historical population trend from 1920 to 2020. This figure indicates that the population of Lone Rock has fluctuated over the years but has seen a decline since 1990. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which can make implementation of mitigation projects fiscally challenging. Lone Rock's population accounted for 0.7% of Kossuth County's population in 2021.¹²³

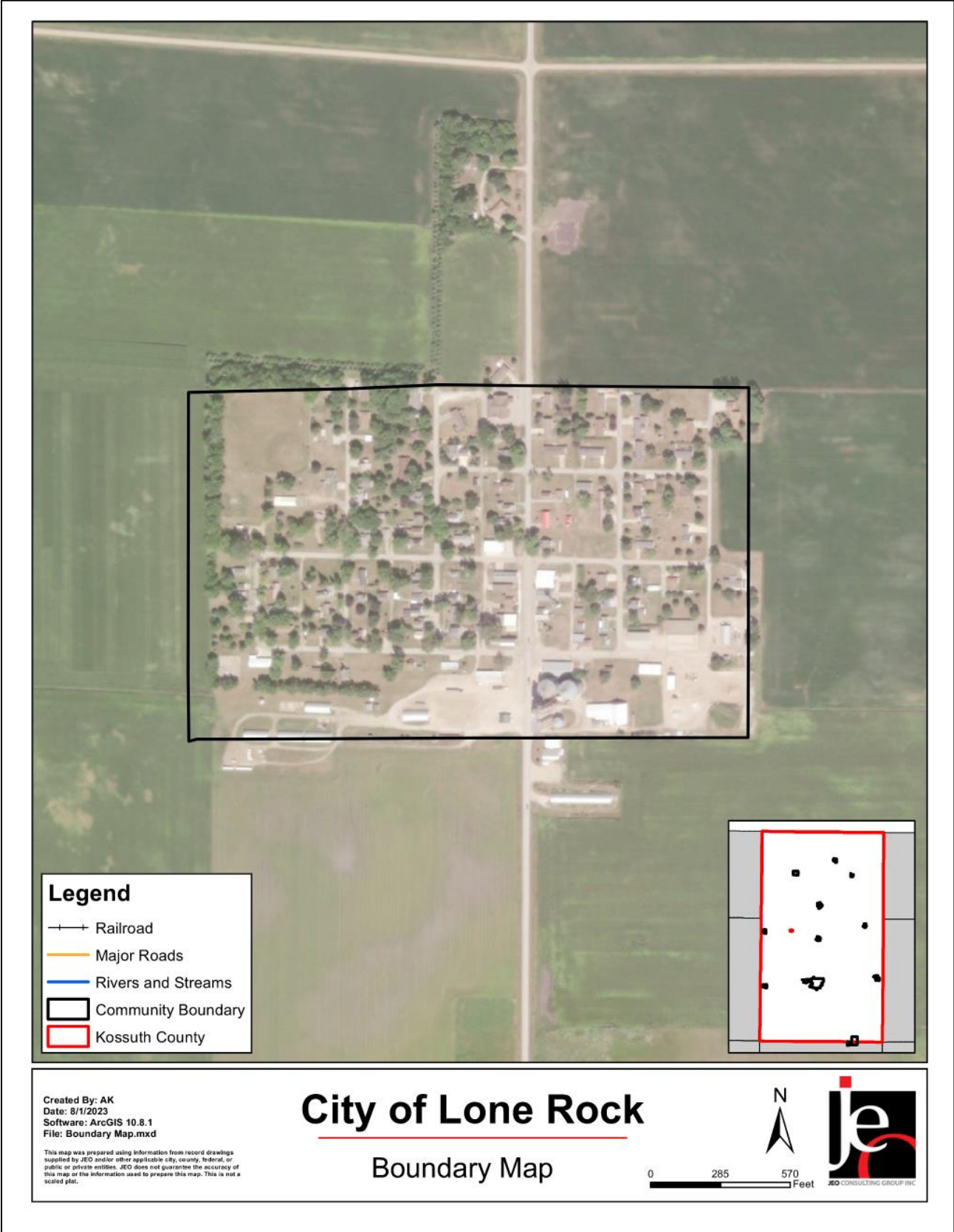
Figure LON.1: Population 1920 - 2020



Source: U.S. Census Bureau

¹²³ United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Figure LON.2: City of Lone Rock

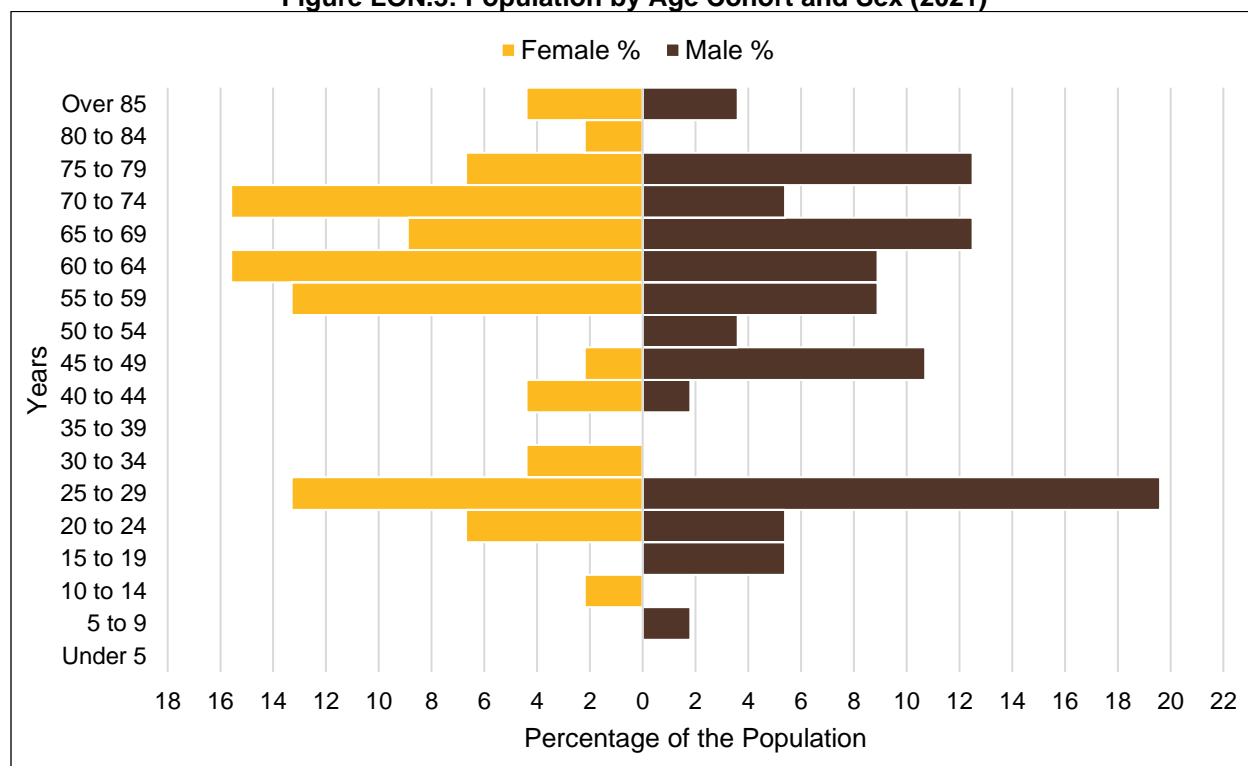


Section Seven: City of Lone Rock Community Profile

The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Lone Rock's population:

- **8.9% is non-white.** Since 2010, Lone Rock became more racially diverse. In 2010, 0.7% of the Lone Rock's population was non-white. By 2021, 8.9% was non-white.¹²⁴
- **Median age of 58.8.** The median age of Lone Rock was 58.8 years old in 2021. The population became older since 2010, when the median age was 54.¹²⁵

Figure LON.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau¹²⁶

The figure above shows Lone Rock's population percentage broken down by sex and five-year age groups. Lone Rock's population is top heavy. This suggests future population decline as older generations are replaced by fewer younger residents.

124 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

125 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

126 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Lone Rock's population has:

- **6.9% of people living below the poverty line.** The poverty rate (6.9%) in the City of Lone Rock was lower than the state's poverty rate (11%) in 2021.¹²⁷
- **\$61,667 median household income.** Lone Rock's median household income in 2021 (\$61,667) was \$3,762 lower than the state (\$65,429).¹²⁸
- **0% unemployment rate.** In 2021 Lone Rock had a lower unemployment rate (0%) when compared to the state (3.9%).¹²⁹
- **25.4% of workers commuted 30 minutes or more to work.** Fewer workers in Lone Rock commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (25.4% compared to 47.3%).¹³⁰

Major Employers

The main employer in Lone Rock is StateLine Cooperative. According to the local planning team, a large percentage of residents commute to other cities for work, such as Algona, Burt, Bancroft, and Emmetsburg.

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Lone Rock's housing stock has:

- **70.5% of housing built prior to 1970.** Lone Rock has a greater share of housing built prior to 1970 than the state (70.5% compared to 49.9%).¹³¹
- **11.5% of housing units vacant.** Lone Rock has a higher vacancy rate (11.5%) compared to the rest of the state (9.3%).¹³²

127 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

128 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

129 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

130 United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

131 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

132 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

- **0% mobile and manufactured housing.** The City of Lone Rock has a smaller share of mobile and manufactured housing (0%) compared to the state (3.5%).¹³³
- **31.5% renter-occupied.** The rental rate of Lone Rock was 31.5% in 2021. This is higher than the state's rate of 28.4%.¹³⁴

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **83.3% of households have a broadband internet subscription.** Lone Rock has a smaller share of households with broadband (83.3%) compared to the state (84.9%).¹³⁵

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Lone Rock has a mayor, a five-member city council, a clerk/treasurer, and a fire chief.

Capability Assessment

The planning team assessed the City of Lone Rock's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Table LON.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	No
	Economic Development Plan	No
	Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	No
	Subdivision Regulation/Ordinance	No
	Floodplain Ordinance	No
	Building Codes	No

133 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

134 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

135 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

Survey Components/Subcomponents		Yes/No
	Source Water Protection Plan	No
	Water System Emergency Response Plan	No
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	No
	Floodplain Administration	No
	GIS Capabilities	No
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	No
	Mutual Aid Agreement	No
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	No
	Applied for grants in the past	No
	Awarded a grant in the past	No
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	No
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	No
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No
	Other (if any)	No
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Table LON.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Community support to implement projects	Moderate
Time to devote to hazard mitigation	Moderate
Ability to expand and improve identified capabilities to achieve mitigation	Moderate

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Lone Rock, is Relatively Low (56.35). The average for the State of Iowa is 43.31.¹³⁶

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources, and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can function as proxies for community capacity. The following table lists the components and scores for the City of Lone Rock compared to the county.

Table LON.4: Rural Capacity Index

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County is Metropolitan?	No	No
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Has a College or University?	No	No
Adults with Higher Education:	20%	18%
Families Below Poverty Level:	2%	7%
Households with Broadband:	86%	78%
People without Health Insurance:	1%	5%
Voter Turnout:	80%	80%

¹³⁶ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

Components of Index	City of Lone Rock	Kossuth County
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	48	-2,350
Overall Rural Capacity Index Score (0-100)	49	66

Source: Headwaters Economics¹³⁷

Plan Integration

Lone Rock has limited planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the city updates these planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

The City of Lone Rock's funds are currently limited to maintaining current facilities and municipal systems. The amount of municipal funds has decreased in recent years. The city has been awarded grants in the past for updates to the depot museum.

Capital Improvement Plan (2017)

The purpose of the capital improvement plan is for the city to strategize how to budget for nonrecurring physical or digital purchases. A capital improvement plan typically spans multiple years and includes financing plans. There is currently no timeline to update the plan.

Future Development Trends

In recent years, the feed mill closed. No new structures were built in the floodplain or hazardous area and no new residential or commercial developments are planned for the next five years. The city's overall vulnerability has not been affected by changes in development.

137 Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.
<https://headwaterseconomics.org/equity/rural-capacity-map/>.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communications; Transportation; and Hazardous Material facilities.



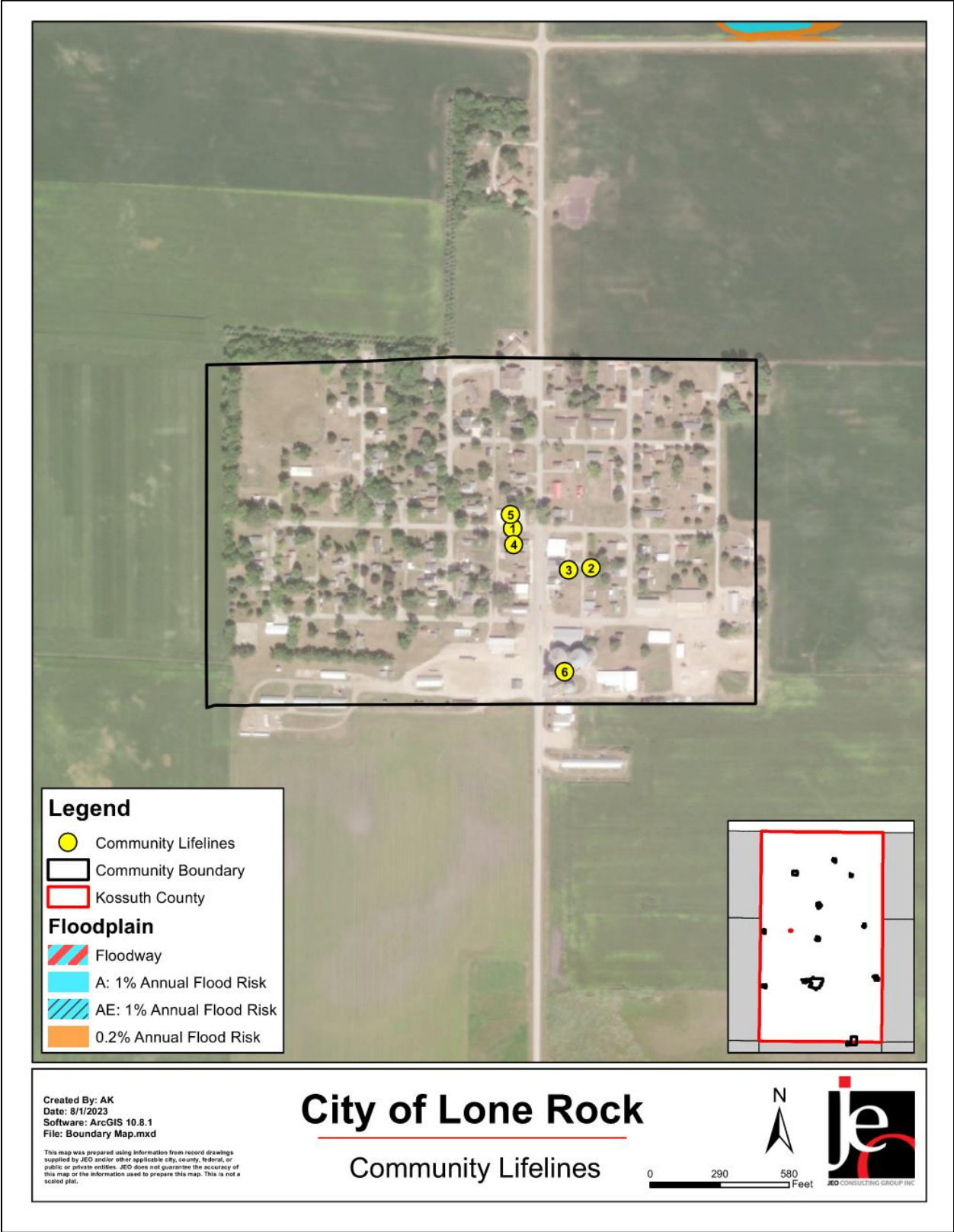
Table LON.5: Community Lifelines

CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	Alert Siren	Communication	-	N
2	Well and Water Treatment Facility	Food, Water, and Shelter	G	N
3	Water Tower	Food, Water, and Shelter	-	N
4	City Hall	Safety and Security	G	N
5	Fire Station	Safety and Security	-	N
6	StateLine Cooperative – Lone Rock Facility	Hazardous Material	-	N

Source: Local Planning Team, E-Plan¹³⁸

138 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure LON.4: Community Lifelines



Transportation

Lone Rock's major transportation routes include County Roads P30 and B19. The most traveled route is County Road B19 with an average of 680 vehicles daily.¹³⁹ Lone Rock has no rail lines. The Algona Municipal Airport is about 10 miles south of the community.¹⁴⁰ Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. According to the National Pipeline Mapping System, there are no gas transmission pipelines or hazardous liquid pipelines that travel near community.¹⁴¹

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there is one chemical storage site within or near Lone Rock that contains hazardous materials (listed in Table LON.5). The planning team said that ag-related chemicals are regularly transported along Main Street. The team noted that no significant spills have happened in town.

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of October 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Table LON.6: Lone Rock Parcel Improvements and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
139	\$6,060,421	0	-	-

Source: County Assessor, 2023

Table LON.7: Lone Rock Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
139	\$6,060,421	0	-	-

Source: County Assessor, 2023

Table LON.8: Lone Rock Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000A	3/20/2018	Flood Insurance Study

Source: FEMA Flood Map Service Center¹⁴²

139 Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

140 Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023.

<https://iowadot.gov/aviation/airport-information>.

141 National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

142 Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Grass and Wildland Fire

According to the local planning team, there are occasional grass and wildfire events in the area surrounding Lone Rock. These mostly occur in corn fields but have yet to seriously threaten the city itself. No projects have yet been completed to reduce the city's risk to grass and wildfire. The planning team indicated that better awareness and education regarding the hazard is needed.

Severe Thunderstorms (includes Hail & Lightning)

Severe thunderstorms are a regular part of the climate and weather in the Midwest. These storms can cause damage through heavy rain, lightning strikes, hail, and high winds. The NCEI reports six instances of severe thunderstorms that occurred in Lone Rock from 1996 to January 2023. These storm events resulted in \$93,000 in property damage, with no injuries or deaths. The local planning team indicated that past events resulted in crop damage/loss, flooding in low lying cropland and occasional basements, and damage to equipment and buildings. A backup generator is needed at the fire station.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for Lone Rock. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. Past impacts to Lone Rock include severe cold, power outages, and transportation issues. The local planning team selected this hazard as a top concern to due to the potential for a wide area to be impacted, as well as the city's rural character. The city owns a backup generator for city water.

Tornado and Windstorm

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and no tornadoes in Lone Rock. The planning team noted that a storm shelter is needed in the future.

Mitigation Strategy

New Mitigation and Strategic Actions

Mitigation Action	Public Fire Prevention Education Program
Description	Create a program to educate Lone Rock residents about the dangers of fire hazards and how to prepare through informational meetings, and interactive media like drills and workshops
Hazard(s)	Grass/Wildfire
Estimated Cost	\$1,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, City Council
Status	Not started

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines. The fire station is in need of one.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, City Council
Status	Not started

Mitigation Action	Safe Room/Storm Shelter
Description	Construct a safe room or storm shelter for resident/visitors to use during severe storms
Hazard(s)	Severe Thunderstorms, Severe Winter Storms, Tornado and Windstorm
Estimated Cost	\$100,000
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	Mayor, City Council
Status	Not started

Continued Mitigation and Strategic Actions

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, City Council
Status	This project is currently on hold.

Mitigation Action	Emergency Management Plans
Description	Develop/update/publicize emergency management plans, including preparedness, response recover, operations, long term recovery, and mitigation plans and maintain data inventory
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Mayor
Status	In progress.

Mitigation Action	Emergency Response Training
Description	Conduct training for emergency response personnel.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$2,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, City Council
Status	This project is currently on hold.

Removed Mitigation and Strategic Actions

Mitigation Action	Enhance Security Measures
Description	Install and maintain security measures at all critical facilities.
Hazard(s)	Terrorism & Civil Unrest
Reason for Removal	This is not a priority for the city due to its small size.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the Mayor, City Council, and Fire Department. The plan will be reviewed and updated bi-annually. The public will be involved in the review and revision process through social media and council meetings.

Community Profile

City of Lu Verne

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table LUV.1: Lu Verne Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Kevin McPeak	Mayor	City of Lu Verne	Round 1 & 2
Kelsay Casey	Mayor Pro-Tem	City of Lu Verne	-
Cody Holmes	Council Member	City of Lu Verne	-

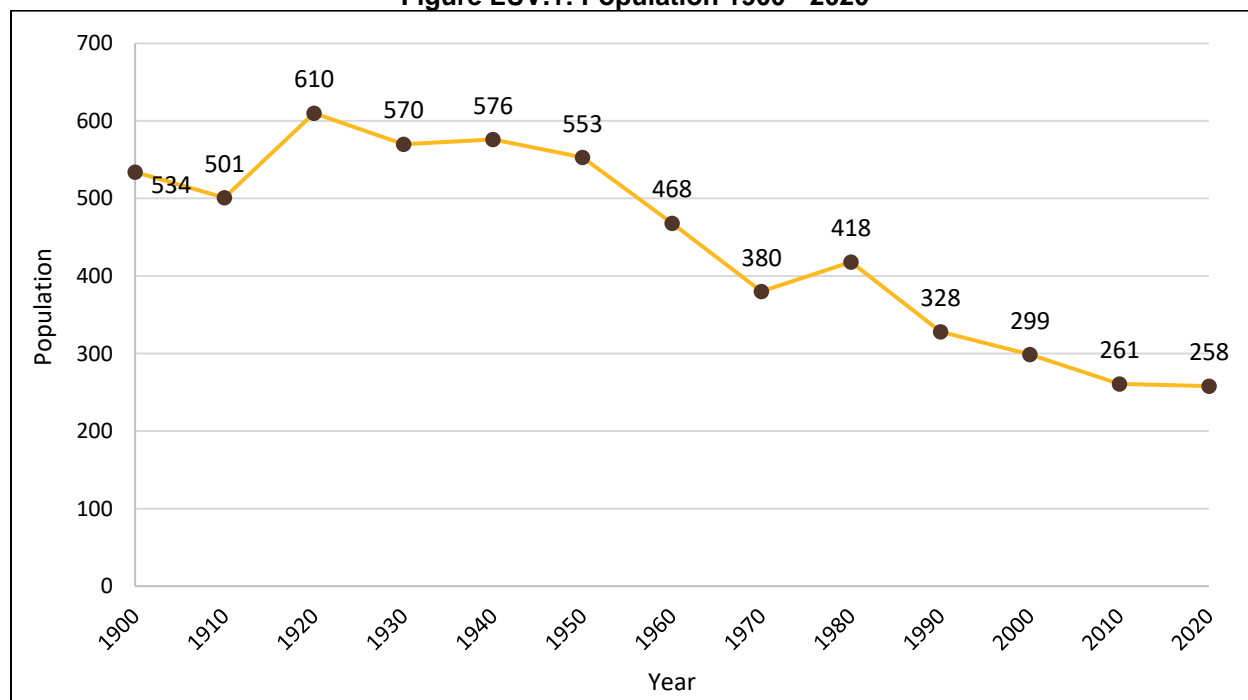
Location and Geography

The City of Lu Verne is located in southeast Kossuth County and northeast Humboldt County and covers an area of 2.26 square miles. The main waterways in the area are Boone River and Prairie Creek, both of which run along the northeastern edge of the city.

Demographics

Lu Verne's estimated population in 2021 was 255. The following figure displays the historical population trend from 1900 to 2020. This figure indicates that the population of Lu Verne has declined since 1980. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which can make implementation of mitigation projects fiscally challenging. Lu Verne's population accounted for 1.7% of Kossuth County's population in 2021.¹⁴³

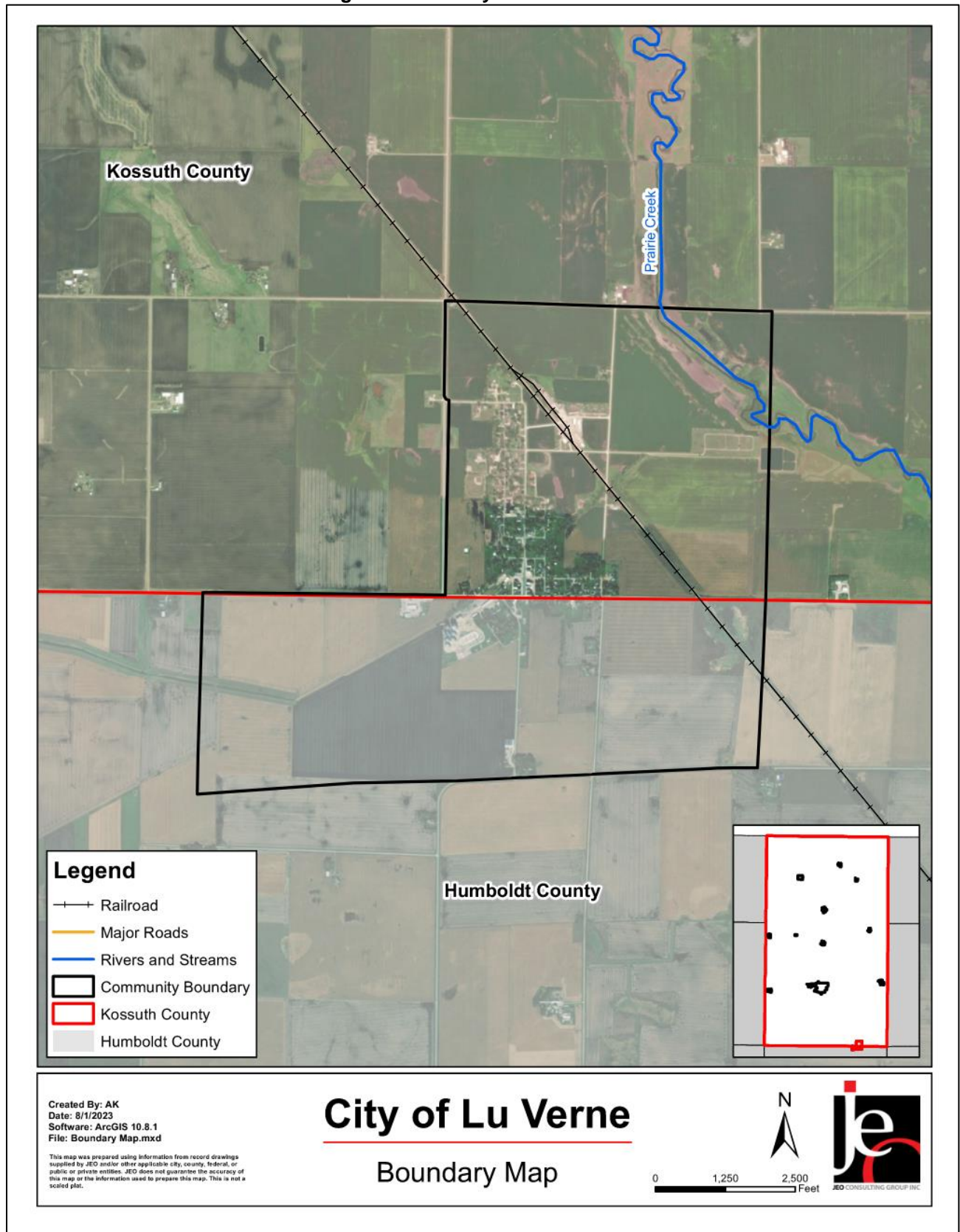
Figure LUV.1: Population 1900 - 2020



Source: U.S. Census Bureau

143 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Figure LUV.2: City of Lu Verne

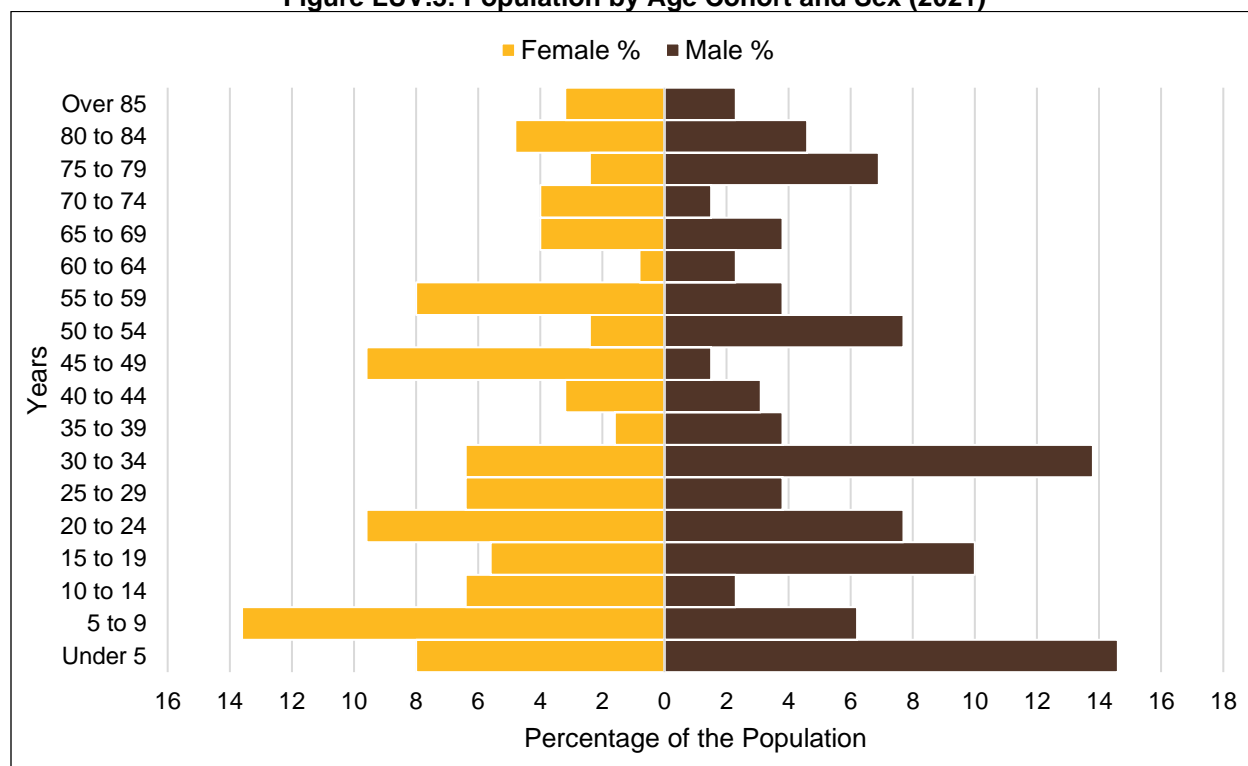


Section Seven: City of Lu Verne Community Profile

The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Lu Verne's population:

- **11% is non-white.** Since 2010, Lu Verne became more racially diverse. In 2010, 3.1% of the Lu Verne's population was non-white. By 2021, 11% was non-white.¹⁴⁴
- **Median age of 31.4.** The median age of Lu Verne was 31.4 years old in 2021. The population became younger since 2010, when the median age was 41.7.¹⁴⁵

Figure LUV.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau¹⁴⁶

The figure above shows Lu Verne's population percentage broken down by sex and five-year age groups. Lu Verne's population is bottom heavy. This suggests a greater number of young families and children who will likely contribute to an increasing population in the future.

144 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

145 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

146 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Lu Verne's population has:

- **21.6% of people living below the poverty line.** The poverty rate (21.6%) in the City of Lu Verne was higher than the state's poverty rate (11%) in 2021.¹⁴⁷
- **\$43,333 median household income.** Lu Verne's median household income in 2021 (\$43,333) was \$22,096 lower than the state (\$65,429).¹⁴⁸
- **4.8% unemployment rate.** In 2021 Lu Verne had a higher unemployment rate (4.8%) when compared to the state (3.9%).¹⁴⁹
- **22.8% of workers commuted 30 minutes or more to work.** Fewer workers in Lu Verne commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (22.8% compared to 23.6%).¹⁵⁰

Major Employers

Major employees in Lu Verne include Carroll Implement, New Co-op, Nutrien Ag Solutions, McPeak Trenching, Flipside Pizza, and The Handlebar & Restaurant. A large percentage of residents commute to other communities for work, such as Algona and Humboldt by means of P60 and C12.

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Lu Verne's housing stock has:

- **77.6% of housing built prior to 1970.** Lu Verne has a greater share of housing built prior to 1970 than the state (77.6% compared to 49.9%).¹⁵¹
- **18.4% of housing units vacant.** Lu Verne has a higher vacancy rate (18.4%) compared to the rest of the state (9.3%).¹⁵²

147 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

148 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

149 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

150 United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

151 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

152 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

Section Seven: City of Lu Verne Community Profile

- **0% mobile and manufactured housing.** The City of Lu Verne has a smaller share of mobile and manufactured housing (0%) compared to the state (3.5%).¹⁵³
- **13.7% renter-occupied.** The rental rate of Lu Verne was 13.7% in 2021. This is lower than the state's rate of 28.4%.¹⁵⁴

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **73.5% of households have a broadband internet subscription.** Lu Verne has a smaller share of households with broadband (73.5%) compared to the state (84.9%).¹⁵⁵

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Lu Verne has a mayor, a five-member city council, and the following offices.

- Clerk/Treasurer
- Attorney
- Fire Chief
- Wastewater Plant Superintendent
- Water/Sewer, Street, and Parks Superintendent
- Library Board Chairperson
- GIS/Zoning Administrator

153 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

154 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

155 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

Capability Assessment

The planning team assessed the City of Lu Verne's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Table LUV.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Economic Development Plan	No
	Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	No
	Floodplain Ordinance	Yes
	Building Codes	No
	Source Water Protection Plan	No
	Water System Emergency Response Plan	No
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	No
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No

Survey Components/Subcomponents		Yes/No
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Table LUV.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Community support to implement projects	Moderate
Time to devote to hazard mitigation	Limited
Ability to expand and improve identified capabilities to achieve mitigation	Limited

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Lu Verne, is Relatively Low (56.35). The average for the State of Iowa is 43.31.¹⁵⁶

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources, and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can function as proxies for community capacity. The following table lists the components and scores

¹⁵⁶ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

for the Lu Verne county subdivision, which includes Lu Verne. Scores are also listed for the county.

Table LUV.4: Rural Capacity Index

Components of Index	City of Lu Verne*	Kossuth County
County is Metropolitan?	No	No
Has a Head of Planning?	No	Yes
Has a College or University?	No	No
Adults with Higher Education:	15%	18%
Families Below Poverty Level:	12%	7%
Households with Broadband:	78%	78%
People without Health Insurance:	1%	5%
Voter Turnout:	80%	80%
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	-34	-2,350
Overall Rural Capacity Index Score (0-100)	45	66

Source: Headwaters Economics¹⁵⁷

*Specific data for the City of Lu Verne was not available. Data listed is from the Lu Verne county subdivision of Kossuth County, which includes the City of Lu Verne.

National Flood Insurance Program (NFIP)

Lu Verne is a member of the NFIP, having joined on 5/1/2011. The initial FIRM for the city was delineated on 5/1/2011 and the current effective map date is 11/3/2017. As of September 30, 2022, there are no NFIP policies in-force for the city. Lu Verne does not currently have any repetitive loss or severe repetitive loss structures.

The city's floodplain administrator is responsible for Lu Verne's NFIP commitments and requirements, include enforcement of the local floodplain management regulations. The local planning team has said that Lu Verne will continue to pursue good standing and involvement with the NFIP in the future.

After a flood event, the community implements substantial improvement and substantial damage provisions as outlined in FEMA's Substantial Improvement/Substantial Damage Desk Reference, which can be found here:

https://www.fema.gov/sites/default/files/documents/fema_nfip_substantial-improvement-substantial-damage-desk-reference.pdf.

Due to the community's lower capacity, as noted in the Rural Capacity Index, when substantial damage determinations are needed, state resources should be sought, or a contractor hired to assist.

¹⁵⁷ Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.
<https://headwaterseconomics.org/equity/rural-capacity-map/>.

Plan Integration

Lu Verne has limited planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the city updates these planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

The City of Lu Verne's funds are currently limited to maintaining current facilities and municipal systems. The amount of municipal funds has decreased in recent years. The city has been awarded grants in the past.

Comprehensive Plan (2009)

The comprehensive plan is designed to guide the future actions and growth of the city. The plan identifies areas that need emergency shelters. The city plans to incorporate information from the hazard mitigation plan into its next comprehensive plan update. Currently there is no plan or timeline for the next update of the city's comprehensive plan.

Floodplain Regulations and Zoning Ordinance (2009)

The city's floodplain regulations and zoning ordinance outline where and how development should occur in the future. These documents prohibit some development within the floodplain, discourage development in the floodplain, identify floodplain areas as parks or open space, and restrict subdivision of land within or adjacent to the floodplain. There is no timeline to update any of these documents.

Future Development Trends

In the last five years, five houses were demolished, and one new house was built. According to the local planning team, no new housing developments or businesses are planned for the next five years. The city's overall vulnerability may have been reduced by the demolition of dilapidated houses.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communications; Transportation; and Hazardous Material facilities.



Table LUV.5: Community Lifelines

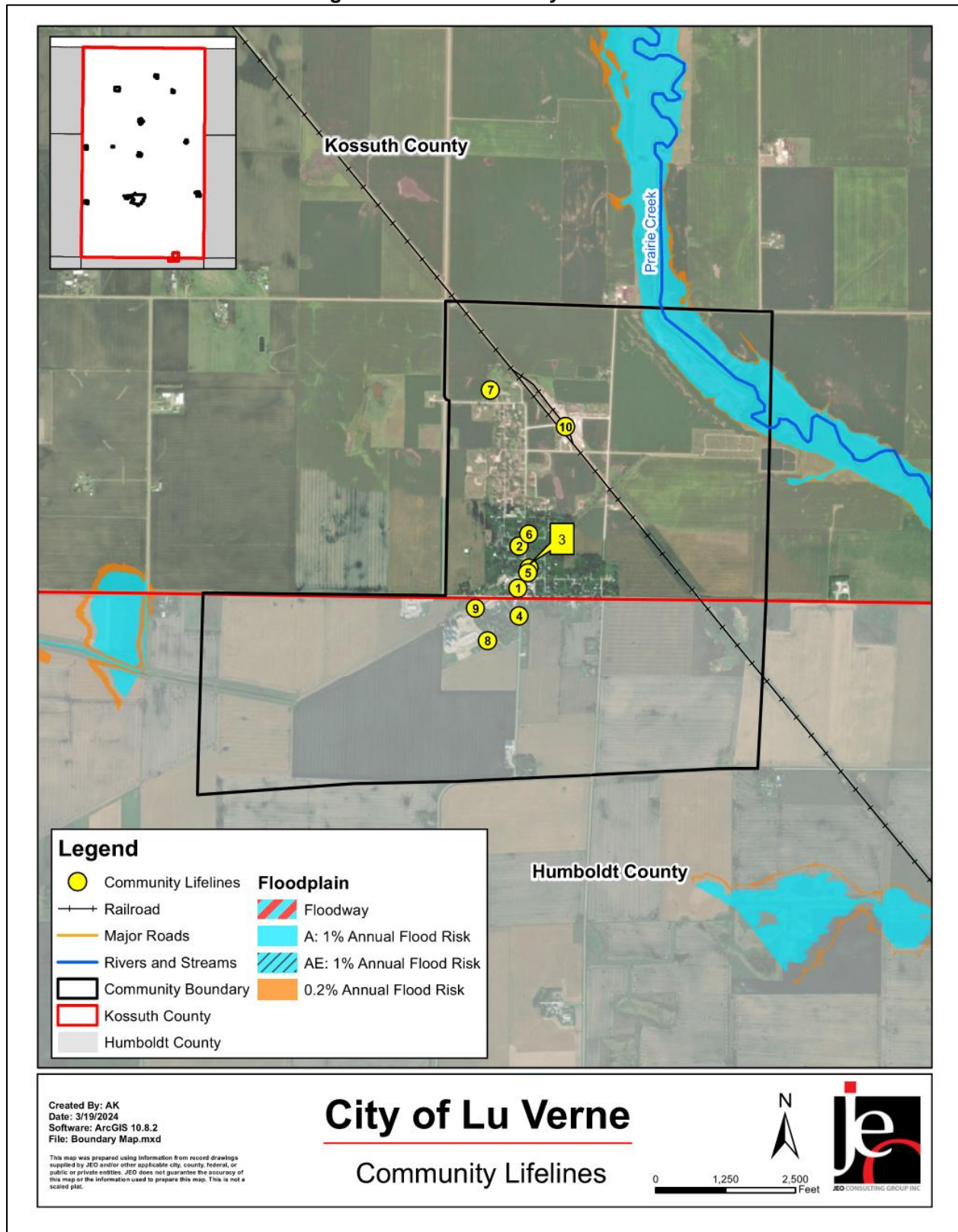
CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	Community Center	Food, Water, and Shelter	S	N
2	Fire Department	Safety and Security	G, S	N
3	City Hall	Safety and Security	S	N
4	Water Plant	Food, Water, and Shelter	G	N
5	Old Fire Dept. Building	Food, Water, and Shelter	S	N
6	Methodist Church	Food, Water, and Shelter	S	N
7	Lutheran Church	Food, Water, and Shelter	S	N
8	LuVerne Propane Plant	Hazardous Material	-	N
9	New Cooperative, Inc., Lu Verne Elevator & Agronomy	Hazardous Material	-	N
10	Nutrien Ag Solutions 426	Hazardous Material	-	N
11*	Nutrien Ag Solutions 6017	Hazardous Material	-	N

Source: Local Planning Team, E-Plan¹⁵⁸

*Community Lifeline located outside of map viewing area.

158 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure LUV.4: Community Lifelines



Transportation

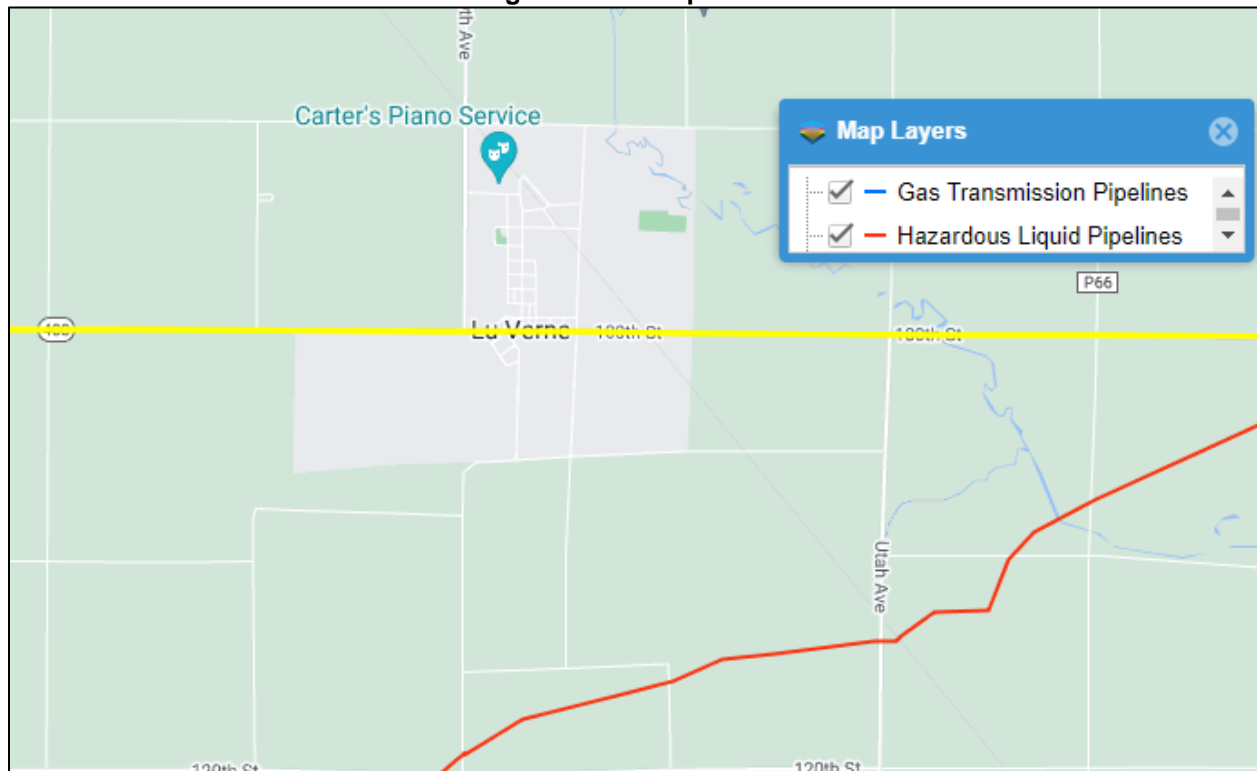
Lu Verne's major transportation routes include County Roads C12, C10, and P60. The most traveled route is County Road C12 with an average of 780 vehicles daily.¹⁵⁹ Lu Verne has a Union Pacific rail line that travels northwest-southeast through the community and no airport nearby.¹⁶⁰ Other routes of local concern include Maple Street, North Street, and Linn Streets. These are partially gravel roads and the city has limited funds to maintain them.

No significant transportation events have occurred locally, according to the local planning team. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. There is one hazardous liquid pipeline that travels near the community. This can be seen on Figure LUV.5.

Figure LUV.5: Pipelines



Source: National Pipeline Mapping System¹⁶¹

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are four chemical storage sites within or near Lu Verne that contain hazardous materials (listed in Table LUV.5). The planning team indicated that anhydrous ammonia, nitrogen, propane

¹⁵⁹ Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

¹⁶⁰ Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023.

<https://iowadot.gov/aviation/airport-information>.

¹⁶¹ National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

and other chemicals are regularly transported along local routes. The team noted that no significant chemical spills have happened in Lu Verne.

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of October 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables. Please note: these tables represent only the improvements in the portion of Lu Verne within Kossuth County.

Table LUV.6: Lu Verne Parcel Improvements and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
165	\$9,389,479	0	-	-

Source: County Assessor, 2023

Table LUV.7: Lu Verne Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
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Source: County Assessor, 2023

Table LUV.8: Lu Verne Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000B	6/1/2022	Flood Insurance Study

Source: FEMA Flood Map Service Center¹⁶²

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Drought

Drought was chosen as a top hazard of concern due to the ongoing drought affecting the area and agricultural impacts. The city indicated that a new water main is needed to reduce impacts from this hazard.

162 Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

Extreme Temperature

The local planning team identified this as a hazard of top concern due to vulnerable populations within the community, especially elderly residents. Power loss from extreme temperatures has impacted the community in the past. A primary concern is the potential impacts to the elderly in an extreme cold scenario where the power goes out and residents could freeze to death. To reduce the community's risk to this hazard, the city purchased a generator and designated two heating and cooling shelters. The planning team indicated that additional backup generators are needed.

Severe Thunderstorms (includes Hail & Lightning)

Severe thunderstorms are a regular part of the climate and weather in the Midwest. These storms can cause damage through heavy rain, lightning strikes, hail, and high winds. The NCEI reports seven instances of severe thunderstorms that occurred in Lu Verne from 1996 to January 2023. These storm events resulted in \$88,000 in property damage, with no injuries or deaths. The local planning team indicated that past impacts include damaged roofs and vehicles. Additional backup generators are needed to reduce the impacts of this hazard.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for Lu Verne. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. Past impacts include severe damage to the city's roads in 2020. The planning team stated that the damage is so bad that the cemetery is inaccessible. Some road repair has occurred; however, re-rocking and replacement of culverts are still needed. A recent grant was awarded to help the city pay for those improvements.

Tornado and Windstorm

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and zero tornadoes in Lu Verne. According to the local planning team, impacts include damages to homes. Additional backup generators and a safe room are needed.

Mitigation Strategy

Completed Mitigation and Strategic Actions

Mitigation Action	Heating/Cooling Centers
Description	Build or designate dedicated heating and cooling centers/shelters
Hazard(s)	Extreme Temperatures
Status	Heating/cooling centers have been designated.

New Mitigation and Strategic Actions

Mitigation Action	Water Main Replacement
Description	Replace the city's water main.
Hazard(s)	Drought, Human Infectious Diseases, Grass and Wildfire
Estimated Cost	\$300,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Water Superintendent
Status	Not started

Continued Mitigation and Strategic Actions

Mitigation Action	Emergency Management Plans
Description	Develop/update/publicize emergency management plans, including preparedness, response recover, operations, long term recovery, and mitigation plans and maintain data inventory
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	High
Lead Agency/Department	EMA, Mayor
Status	In progress

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Public Safety
Status	Not started

Mitigation Action	Continuity of Operations Plan (COOP)
Description	Develop a Continuity of Operations Plan to use during a disaster that provides a means to continue operations, who is in charge, where to set up control and command, etc.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	Not started

Mitigation Action	Flood Protection
Description	Acquire flood prone properties for conversion into green space; or elevate structures to or above base flood elevation.
Hazard(s)	Flooding
Estimated Cost	\$500,000
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	Mayor, EMA
Status	Not started

Mitigation Action	Safe Rooms
Description	Construct or retrofit existing structures into public safe rooms at government facilities, recreational facilities, recreational areas, manufactured home parks, schools, childcare centers, and other critical facilities
Hazard(s)	Tornado and Windstorm, Severe Thunderstorms, Severe Winter Storms
Estimated Cost	\$250,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	Mayor, EMA
Status	Not started

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	High
Lead Agency/Department	Mayor, EMA
Status	One generator was recently acquired. Additional ones are still needed, especially at City Hall and the Community Center. Project is on hold due to limited funds.

Mitigation Action	Enhance Security Measures
Description	Install and maintain security measures at all critical facilities.
Hazard(s)	Terrorism and Civil Unrest
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	Mayor, EMA
Status	Not started

Mitigation Action	Emergency Response Training
Description	Conduct training for emergency response personnel
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	High
Lead Agency/Department	EMA, Fire Department
Status	Training is conducted regularly.

Mitigation Action	Amend Floodplain Regulations to Remain in NFIP
Description	Recently, FEMA and IDNR completed an update to the Kossuth County flood insurance rate maps (FIRMs). To maintain good standing with the NFIP, the city must amend floodplain regulations to reference the effective date of the new maps, which is 11/3/2017.
Hazard(s)	Flooding
Estimated Cost	Staff Time
Local Funding Source	City General Fund
Timeline	1 year
Priority	High
Lead Agency/Department	Mayor, EMA
Status	The city intends to complete this at their next council meeting.

Removed Mitigation and Strategic Actions

Mitigation Action	Flood-prone Property Acquisition
Description	Acquire flood prone properties for conversion into green space; or elevate structures to or above base flood elevation..
Hazard(s)	Flooding
Reason for Removal	This project is no longer a priority for the city.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the Mayor, Mayor Pro-Tem, and City Clerk. The plan will be reviewed and updated annually. The public will be involved in the review and revision process through social media and letters to all residents.

Community Profile

City of Swea City

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table SWC.1: Swea City Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
John Crookshank	Fire Chief	City of Swea City	Recordings
Travis Stevens	Public Works Supv.	City of Swea City	-
Wendy Zielske	Mayor	City of Swea City	-

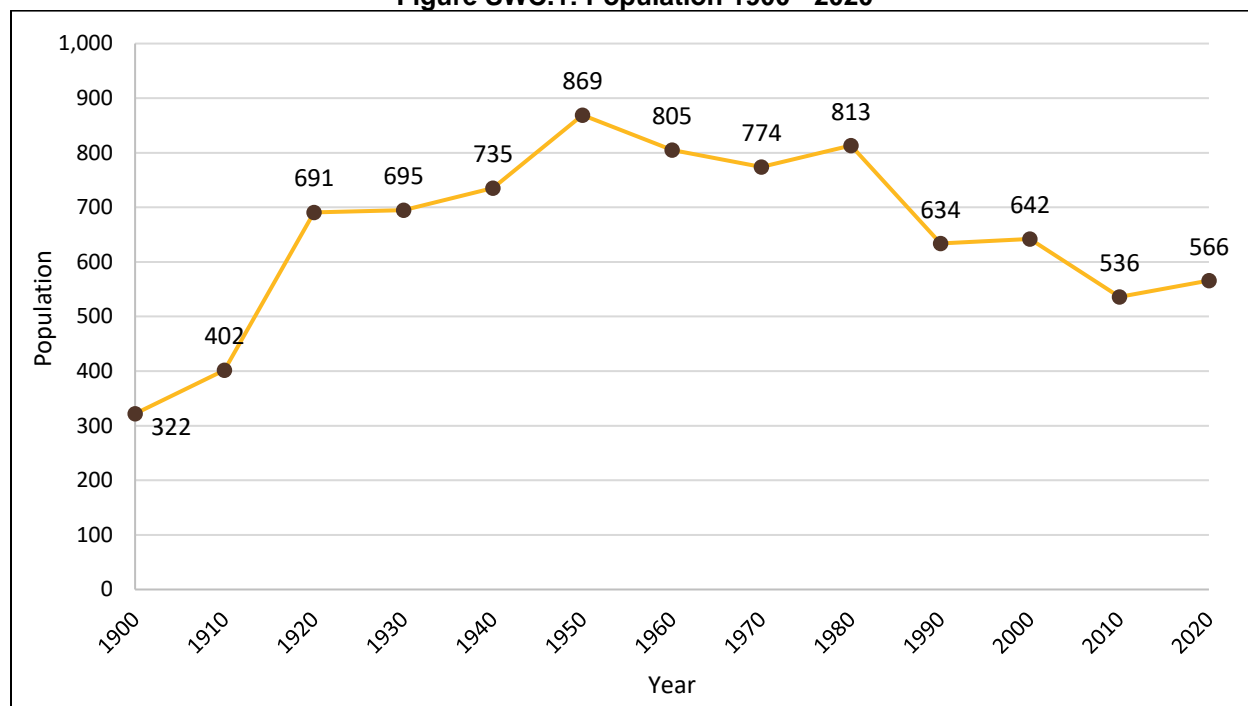
Location and Geography

The City of Swea City is located in northwest Kossuth County and covers an area of 0.74 square miles. The main waterways in the area are Mud Creek, which runs near the west and south edges of the city, and the West Branch Blue Earth River, located about one mile northwest.

Demographics

Swea City's estimated population in 2021 was 739. The following figure displays the historical population trend from 1900 to 2020. This figure indicates that the population of Swea City has fluctuated in recent decades but has most recently seen an increase. Increasing populations are associated with more robust hazard mitigation and emergency planning requirements for development. Growing populations can also increase tax revenues, allowing communities to pursue additional mitigation projects. Swea City's population accounted for 5% of Kossuth County's population in 2021.¹⁶³

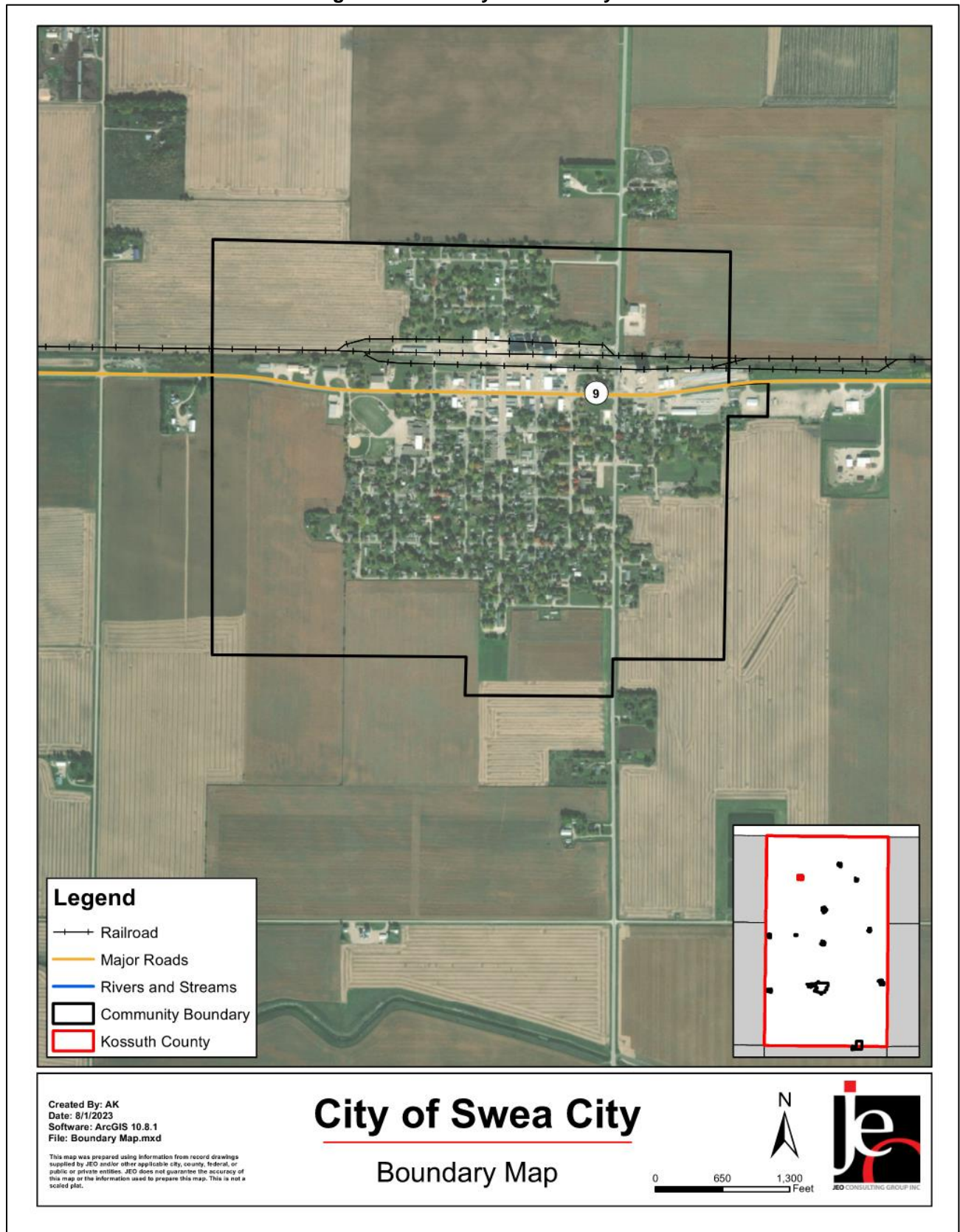
Figure SWC.1: Population 1900 - 2020



Source: U.S. Census Bureau

¹⁶³ United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Figure SWC.2: City of Swea City

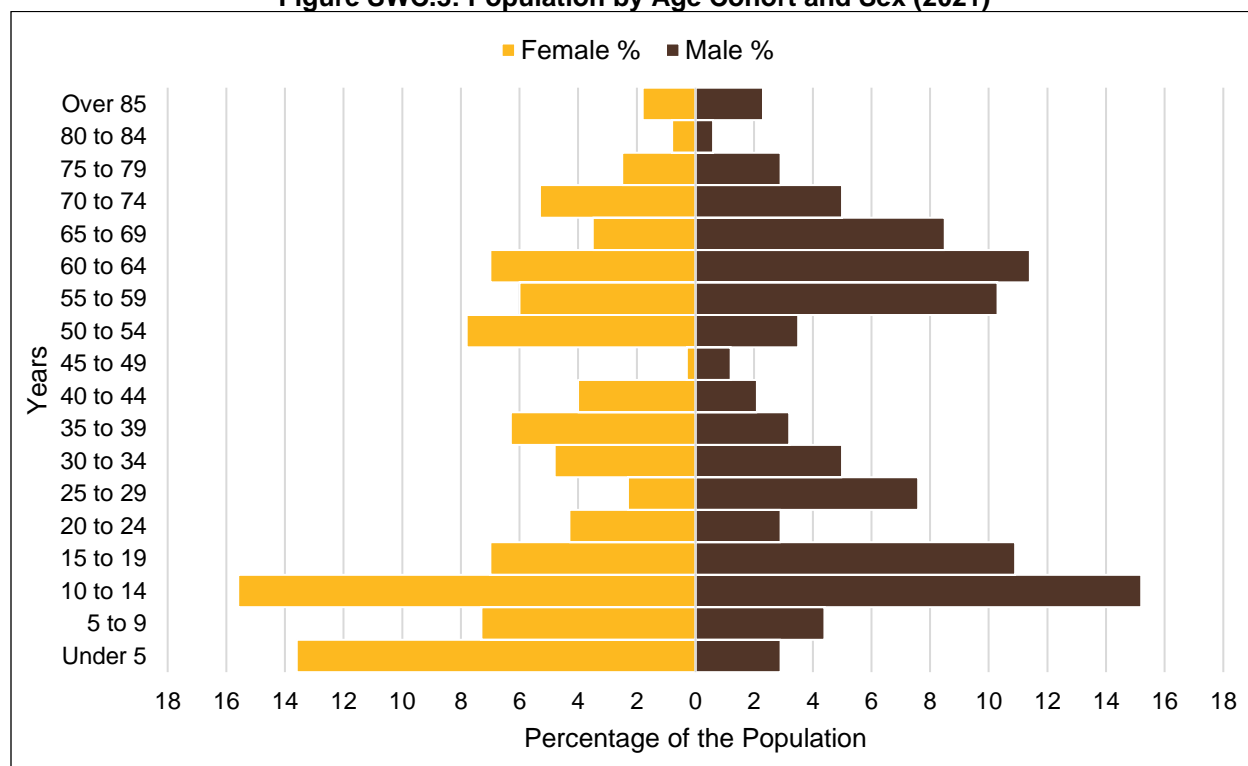


Section Seven: City of Swea City Community Profile

The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Swea City's population:

- **18.8% is non-white.** Since 2010, Swea City became more racially diverse. In 2010, 1.5% of the Swea City's population was non-white. By 2021, 18.8% was non-white.¹⁶⁴
- **Median age of 34.1.** The median age of Swea City was 34.1 years old in 2021. The population became younger since 2010, when the median age was 43.8.¹⁶⁵

Figure SWC.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau¹⁶⁶

The figure above shows Swea City's population percentage broken down by sex and five-year age groups. Swea City's population is similarly spread throughout most age groups. This indicates that the population is likely to remain stable in the future.

164 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

165 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

166 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Swea City's population has:

- **34.2% of people living below the poverty line.** The poverty rate (34.2%) in the City of Swea City was higher than the state's poverty rate (11%) in 2021.¹⁶⁷
- **\$43,633 median household income.** Swea City's median household income in 2021 (\$43,633) was \$21,796 lower than the state (\$65,429).¹⁶⁸
- **5.2% unemployment rate.** In 2021 Swea City had a higher unemployment rate (5.2%) when compared to the state (3.9%).¹⁶⁹
- **29.9% of workers commuted 30 minutes or more to work.** Fewer workers in Swea City commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (29.9% compared to 40.1%).¹⁷⁰

Major Employers

The major employers in Swea City include Brand FX and North Union School. According to the local planning team, a large percentage of residents commute to other cities for work, such as Fairmont, Minnesota and Algona, Iowa.

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Swea City's housing stock has:

- **71.3% of housing built prior to 1970.** Swea City has a greater share of housing built prior to 1970 than the state (71.3% compared to 49.9%).¹⁷¹
- **15.8% of housing units vacant.** Swea City has a higher vacancy rate (15.8%) compared to the rest of the state (9.3%).¹⁷²

167 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

168 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

169 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

170 United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

171 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

172 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

- **3.2% mobile and manufactured housing.** The City of Swea City has a smaller share of mobile and manufactured housing (3.2%) compared to the state (3.5%).¹⁷³
- **22.9% renter-occupied.** The rental rate of Swea City was 22.9% in 2021. This is lower than the state's rate of 28.4%.¹⁷⁴

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **84.6% of households have a broadband internet subscription.** Swea City has a similar share of households with broadband (84.6%) compared to the state (84.9%).¹⁷⁵

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Swea City has a mayor, a five-member city council, and the following offices.

- Clerk/Treasurer
- Attorney
- Fire Chief
- Wastewater Plant Superintendent
- Water/Sewer Superintendent
- Solid Waste Superintendent
- Street Superintendent
- Library Board Chairperson
- Zoning Administrator

Capability Assessment

The planning team assessed the City of Swea City's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

173 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

174 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

175 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

Table SWC.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Economic Development Plan	Yes
	Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	No
	Floodplain Ordinance	No
	Building Codes	Yes
	Source Water Protection Plan	No
	Water System Emergency Response Plan	No
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	No
	Floodplain Administration	No
	GIS Capabilities	No
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	No
	Gas/Electric Service Fees	No
	Storm Water Service Fees	Yes
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No

Survey Components/Subcomponents		Yes/No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Table SWC.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Community support to implement projects	Limited
Time to devote to hazard mitigation	Limited
Ability to expand and improve identified capabilities to achieve mitigation	Limited

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Swea City, is Relatively Low (56.35). The average for the State of Iowa is 43.31.¹⁷⁶

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources, and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can function as proxies for community capacity. The following table lists the components and scores for the City of Swea City compared to the county.

¹⁷⁶ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

Table SWC.4: Rural Capacity Index

Components of Index	City of Swea City	Kossuth County
County is Metropolitan?	No	No
Has a Head of Planning?	No	Yes
Has a College or University?	No	No
Adults with Higher Education:	17%	18%
Families Below Poverty Level:	23%	7%
Households with Broadband:	68%	78%
People without Health Insurance:	14%	5%
Voter Turnout:	80%	80%
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	18	-2,350
Overall Rural Capacity Index Score (0-100)	43	66

Source: Headwaters Economics¹⁷⁷

Plan Integration

Swea City has limited planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the city updates these planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

The City of Swea City's funds are currently limited to maintaining current facilities and municipal systems. The amount of municipal funds has increased slightly in recent years. The city has recently applied for a grant funds for a lagoon project (2023-2025). The grants programs include SRF, CDBG, WFTAP, and USDA. The city was awarded a FEMA grant in 2019-2020 for street repairs.

Zoning Ordinance (1994)

The city's zoning ordinance outlines where and how development should occur in the future and includes well setback requirements. The city plans to update this ordinance in the next year.

Building Code (1994)

The building code sets standards for constructed buildings and structures. These codes regulate and govern the conditions and maintenance of all property, buildings, and structures by providing the standards for supplied utilities, facilities, and other physical things and conditions essential to ensure that structures are safe, sanitary, and fit for occupation and use.

177 Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.
<https://headwaterseconomics.org/equity/rural-capacity-map/>.

Future Development Trends

In the last five years, the city has seen continued street improvements, a new business, and the demolition of a city building and private houses. According to the planning team, no new residential or commercial developments are currently planned for the next five years. The city's overall vulnerability may have been reduced by the demolition of dilapidated buildings.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communication; Transportation; and Hazardous Material facilities.



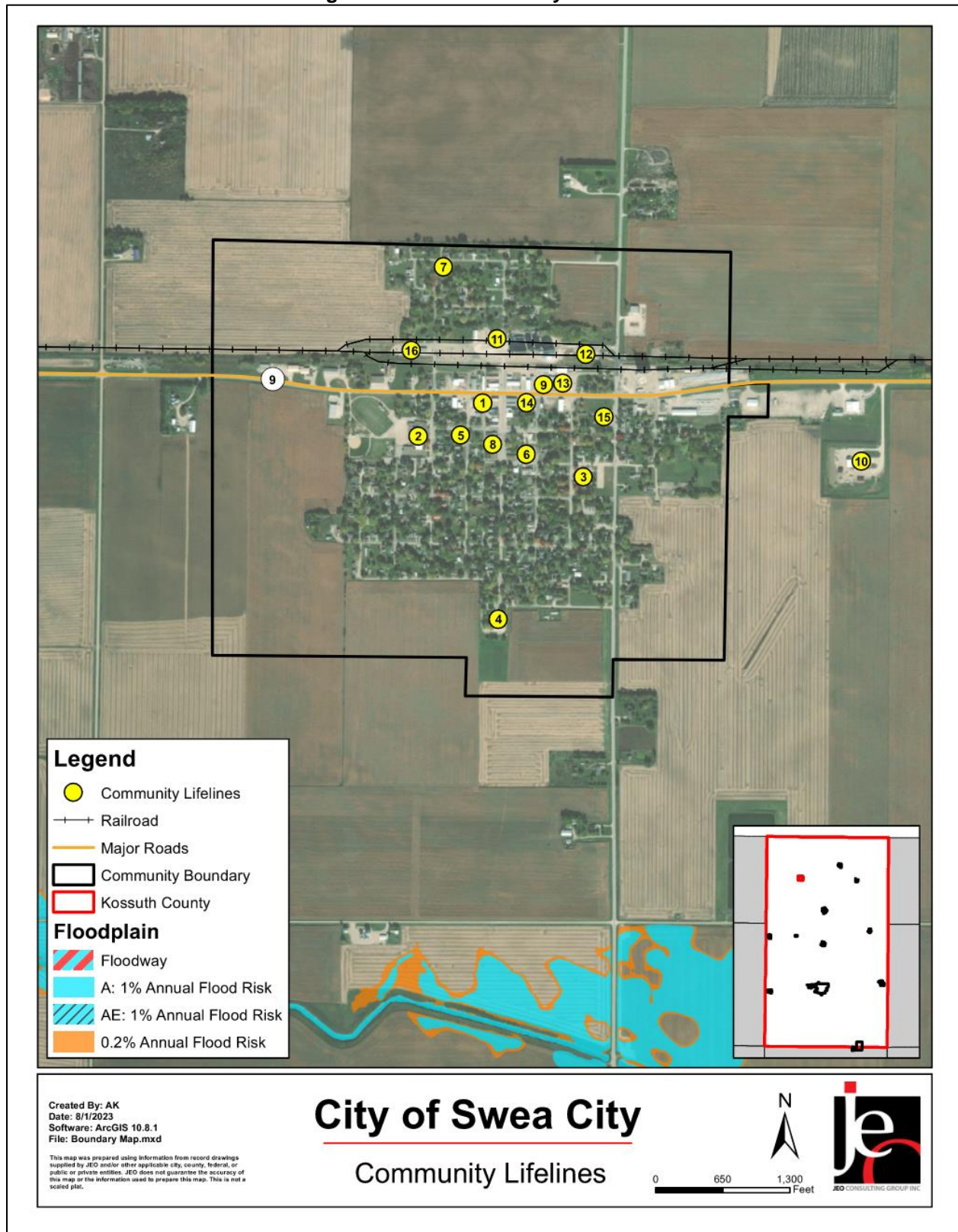
Table SWC.5: Community Lifelines

CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	Fire Hall	Safety and Security	G, S	N
2	North Union School	Other	S	N
3	Immanuel Lutheran Church	Food, Water, and Shelter	S	N
4	Methodist Church	Food, Water, and Shelter	S	N
5	Baptist Church	Food, Water, and Shelter	S	N
6	Open Bible Church	Food, Water, and Shelter	S	N
7	Our Saviour Lutheran Church	Food, Water, and Shelter	S	N
8	Main Street Manor	Health and Medical	G, S	N
9	BrandFX LLC	Hazardous Material	-	N
10	Iowa DOT Swea City Maintenance Garage	Hazardous Material	G	N
11	Stateline Coop	Hazardous Material	-	N
12	Bulk Fuel Storage (Loof's Tankwagon)	Hazardous Material	-	N
13	Yesway	Hazardous Material	-	N
14	City Water Plant	Hazardous Material	G	N
15	City Pool	Hazardous Material	-	N
16	Brand FX Weld Shop	Hazardous Material	-	N

Source: Local Planning Team, E-Plan¹⁷⁸

178 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure SWC.4: Community Lifelines



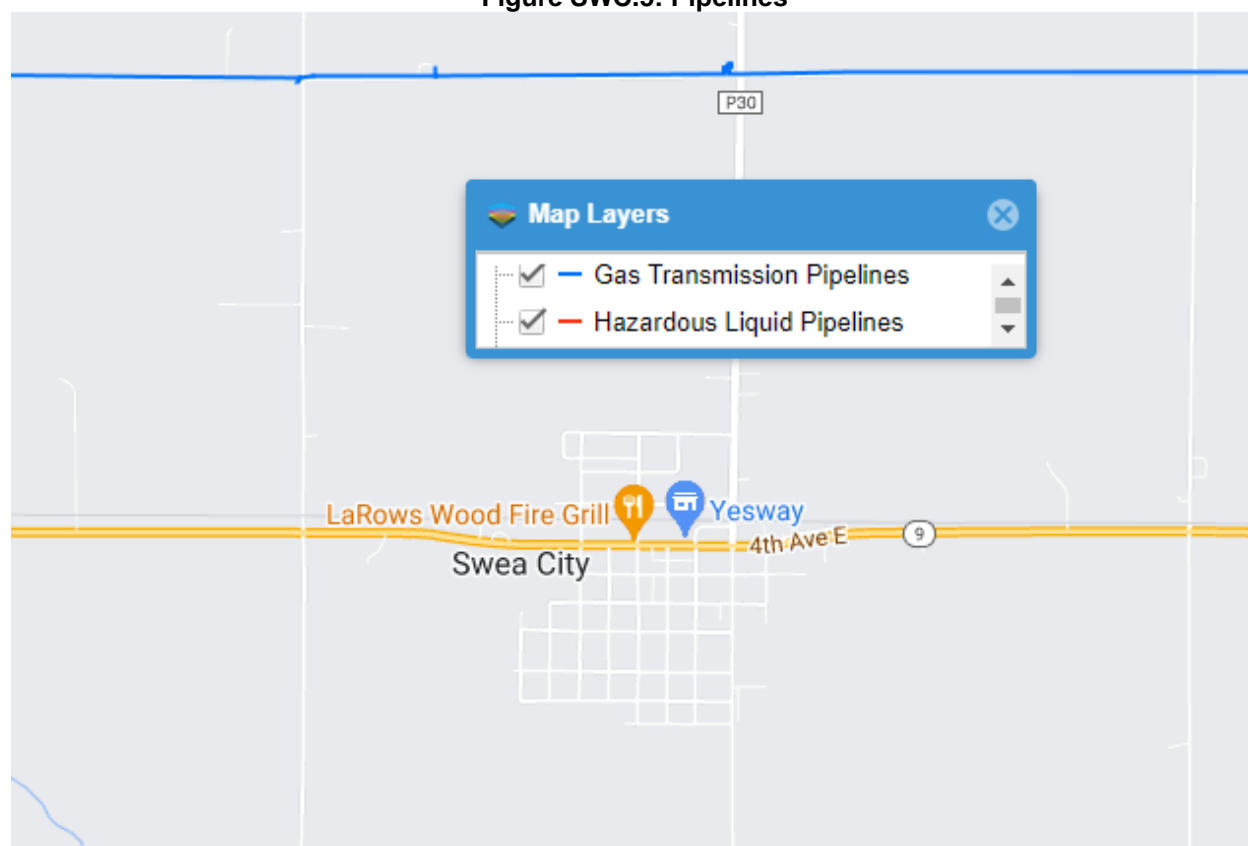
Transportation

Swea City's major transportation routes include State Highway 9 and County Road P30. The most traveled route is Highway 9 with an average of 2,210 vehicles daily, 400 of which are trucks.¹⁷⁹ Swea City has a Union Pacific line that travels east-west through the community and no airport nearby.¹⁸⁰ No significant transportation events have occurred locally, according to the local planning team. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. There is one gas transmission pipeline that travels near the community. This can be seen on Figure SWC.5.

Figure SWC.5: Pipelines



Source: National Pipeline Mapping System¹⁸¹

According to the Tier II System reports submitted to the Iowa Department of Natural Resources and the local planning team, there are eight chemical storage sites within or near Swea City that contain hazardous materials (listed in Table SWC.5). The planning team indicated that chemicals such as gasoline and diesel fuel, anhydrous ammonia, and various manufacturing chemicals are

179 Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

180 Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023.

<https://iowadot.gov/aviation/airport-information>.

181 National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

regularly transported along local routes. The team noted that no significant chemical spills have happened in Swea City.

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of October 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Table SWC.6: Swea City Parcel Improvements and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
387	\$27,054,346	0	-	-

Source: County Assessor, 2023

Table SWC.7: Swea City Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
387	\$27,054,346	0	-	-

Source: County Assessor, 2023

Table SWC.8: Swea City Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000A	3/20/2018	Flood Insurance Study

Source: FEMA Flood Map Service Center¹⁸²

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Hazardous Materials Release

The local planning team expressed concern with this hazard due to the airborne capability of most chemicals in the area. No major releases have occurred in the community according to the local planning team. The National Response Center reported a fire at a chemical storage site in Swea City in 1998, but it is unknown whether chemicals were involved. The local planning team

182 Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

indicated that no projects have been undertaken to reduce the community's risk to this hazard; however, mitigation/emergency response plans are in place at chemical storage sites. In the event of a large spill, the Swea City Fire Department would be called upon to respond; however, their capabilities are limited. Highway 9 and County Road P30 run through the community adjacent to where residents live. A spill along these routes could impact this population.

Infrastructure Failure

The local planning team selected this as a top hazard due to the severe impact a failure could create. The city is continually assessing and updating systems as local funding allows. The planning team is specifically concerned with the water, sewer, and storm sewer systems due to their age. The city has repaired and replaced sections that have failed and performs regular maintenance to keep them operational where possible. Other infrastructure identified as needing to be updated or replaced includes a lagoons project that will involve new lift station pumps and control panels, a water tower improvement project, and an evaluation of the water softener system.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for Swea City. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. The local planning team noted that a storm in the spring of 2019 impacted the city and damaged roads. The city was awarded FEMA funding to make needed repairs. The team expressed concern for this hazard due to late snowstorms and rapid melt that can cause flooding and damage to roads. Snow removal resources have been deemed sufficient. To reduce risk to this hazard the city performs regular street review and repair. Additionally, the city would like to purchase a large backup generator in the future to further mitigate risk.

Tornado and Windstorm

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and no tornadoes in Swea City. The local planning team cited impacts from a September 2018 windstorm that caused property damage, extensive tree damage, and the destruction of the EMS communication tower. The planning team selected this a hazard of top concern due to the large impact it can have on the community and city operations. The local fire station currently acts as the primary storm shelter in the community. One standby natural gas generator was installed in 2022; however, the city would like to purchase one for the city shop and one for City Hall (which acts as the incident command center in the event of a severe storm). A portable generator unit could also be useful as it could be moved to any location or shelters as needed. Currently no powerlines are buried in the city.

Mitigation Strategy

New Mitigation and Strategic Actions

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	Not started

Mitigation Action	Hazardous Materials Release Training
Description	Partner with the local fire department to increase capabilities and perform training to mitigate impacts involved in a hazardous materials release event.
Hazard(s)	Hazardous Materials Release
Estimated Cost	\$10,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	Not started

Continued Mitigation and Strategic Actions

Mitigation Action	Emergency Management Plans
Description	Develop/update/publicize emergency management plans, including preparedness, response recover, operations, long term recovery, and mitigation plans and maintain data inventory
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Mayor
Status	In progress

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Local Public Safety
Status	Ongoing

Mitigation Action	Promote Resiliency Through Codes and Regulations
Description	Develop and promote comprehensive, cost-effective, common-sense recommendations for adoption and enforcement of land use, ordinances and regulations, zoning, and building codes that decrease risk in areas susceptible to hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Mayor
Status	Not started

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the Mayor and Emergency Manager. The plan will be reviewed and updated bi-annually. The public will be involved in the review and revision process through city council meetings.

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Community Profile

City of Titonka

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table TNK.1: Titonka Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Katie Prothman	City Council Member	City of Titonka	Round 1 & 2
Karen Hamilton	City Clerk	City of Titonka	-
Adam Posey	City Superintendent	City of Titonka	-

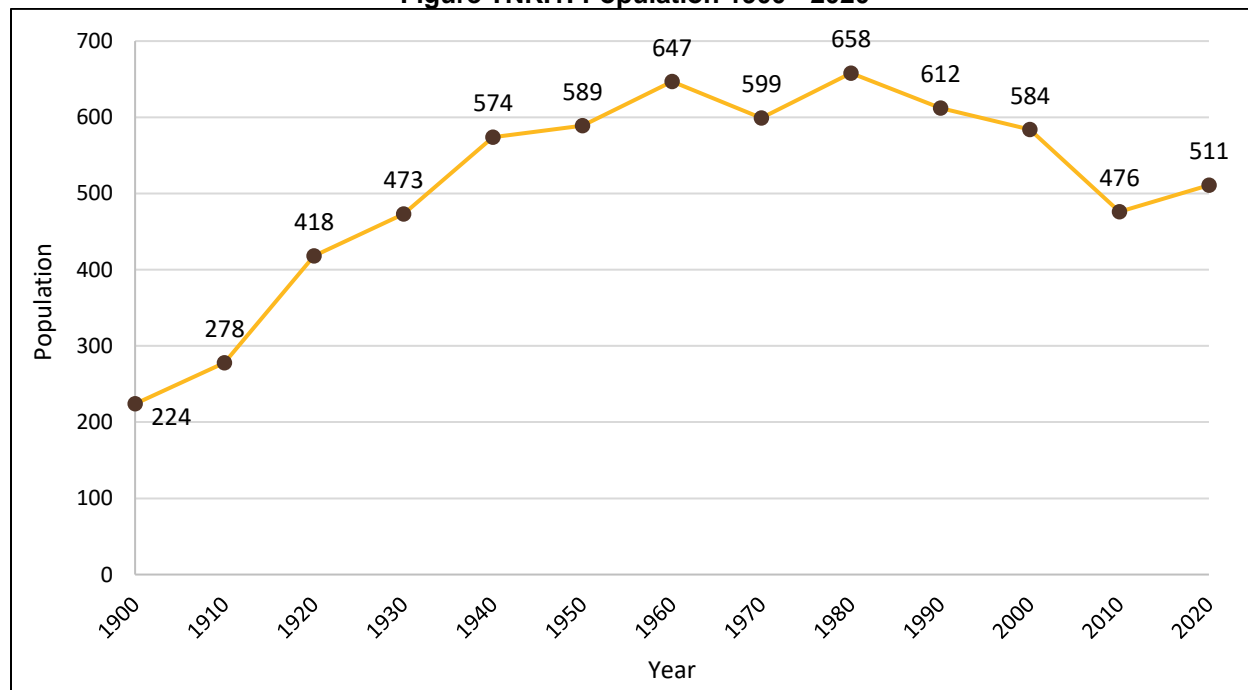
Location and Geography

The City of Titonka is located in east central Kossuth County and covers an area of 0.28 square miles. The main waterway in the area is Buffalo Creek, which runs along the northern and eastern edges of the city.

Demographics

Titonka's estimated population in 2021 was 392. The following figure displays the historical population trend from 1900 to 2020. This figure indicates that the population of Titonka decreased from 1980 to 2010 but has since seen an increase. Increasing populations are associated with more robust hazard mitigation and emergency planning requirements for development. Growing populations can also increase tax revenues, allowing communities to pursue additional mitigation projects. Titonka's population accounted for 2.6% of Kossuth County's population in 2021.¹⁸³

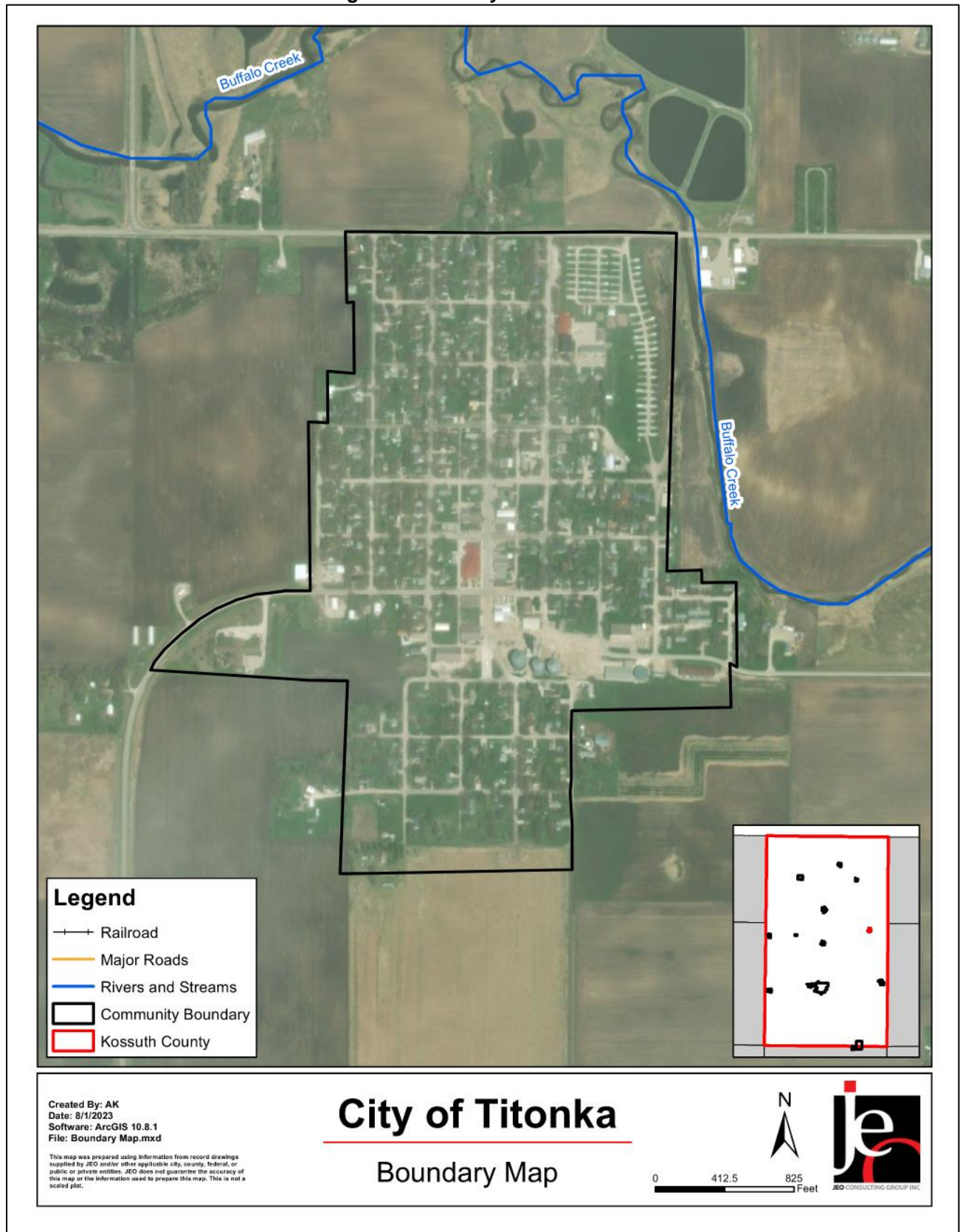
Figure TNK.1: Population 1900 - 2020



Source: U.S. Census Bureau

183 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Figure TNK.2: City of Titonka

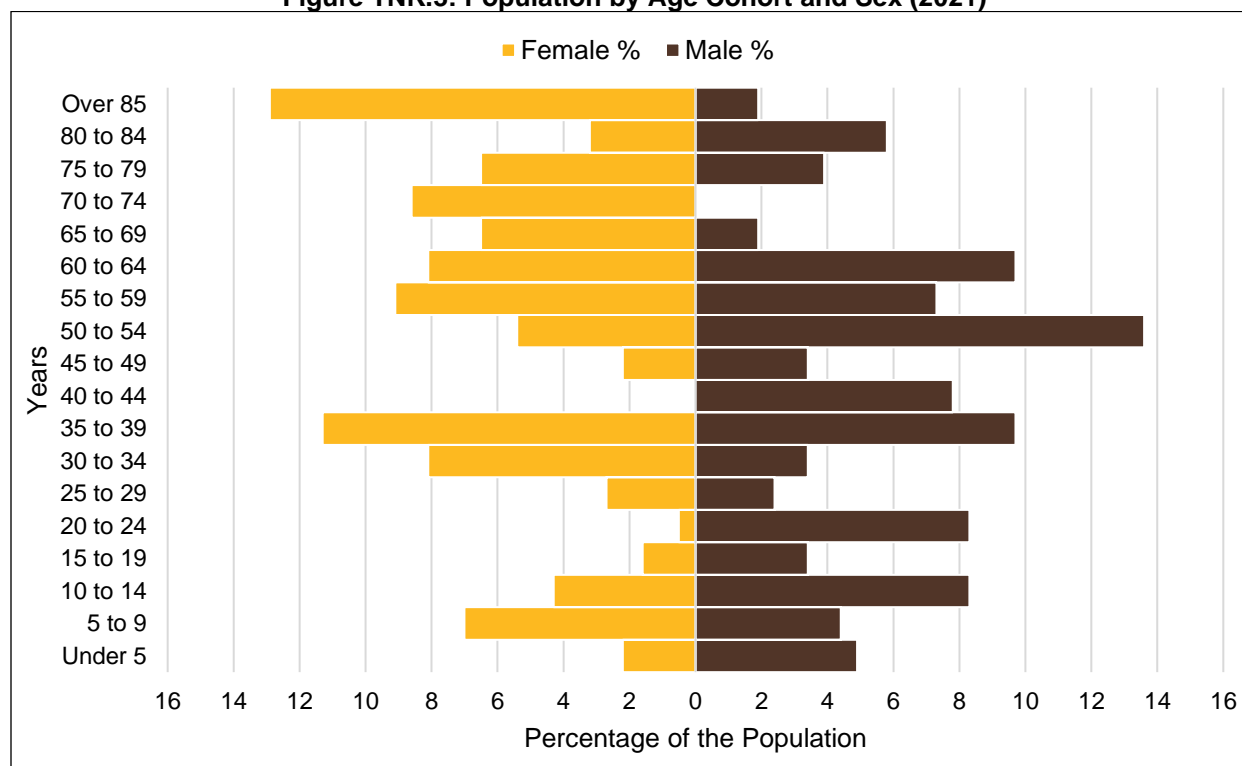


Section Seven: City of Titonka Community Profile

The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Titonka's population:

- **5.1% is non-white.** Since 2010, Titonka became more racially diverse. In 2010, 1.3% of the Titonka's population was non-white. By 2021, 5.1% was non-white.¹⁸⁴
- **Median age of 51.2.** The median age of Titonka was 51.2 years old in 2021. The population became younger since 2010, when the median age was 58.3.¹⁸⁵

Figure TNK.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau¹⁸⁶

The figure above shows Titonka's population percentage broken down by sex and five-year age groups. Titonka's population is somewhat top heavy. This suggests future population decline as older generations are replaced by fewer younger residents.

184 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

185 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

186 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Titonka's population has:

- **7.4% of people living below the poverty line.** The poverty rate (7.4%) in the City of Titonka was lower than the state's poverty rate (11%) in 2021.¹⁸⁷
- **\$60,804 median household income.** Titonka's median household income in 2021 (\$60,804) was \$4,625 lower than the state (\$65,429).¹⁸⁸
- **1.4% unemployment rate.** In 2021 Titonka had a lower unemployment rate (1.4%) when compared to the state (3.9%).¹⁸⁹
- **21.7% of workers commuted 30 minutes or more to work.** Fewer workers in Titonka commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (21.7% compared to 34.9%).¹⁹⁰

Major Employers

Major employers in the community include Titonka Care Center, NSB Bank, Titonka-Burt Communications, and the City of Titonka. According to the local planning team, a large percentage of residents commute to other cities for work, such as Forest City and Algona.

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Titonka's housing stock has:

- **73.8% of housing built prior to 1970.** Titonka has a greater share of housing built prior to 1970 than the state (73.8% compared to 49.9%).¹⁹¹
- **16.4% of housing units vacant.** Titonka has a higher vacancy rate (16.4%) compared to the rest of the state (9.3%).¹⁹²

187 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

188 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

189 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

190 United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

191 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

192 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

Section Seven: City of Titonka Community Profile

- **2.4% mobile and manufactured housing.** The City of Titonka has a smaller share of mobile and manufactured housing (2.4%) compared to the state (3.5%).¹⁹³
- **9.2% renter-occupied.** The rental rate of Titonka was 9.2% in 2021. This is lower than the state's rate of 28.4%.¹⁹⁴

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **87.9% of households have a broadband internet subscription.** Titonka has a greater share of households with broadband (87.9%) compared to the state (84.9%).¹⁹⁵

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Titonka has a mayor, a five-member city council, and the following offices.

- Clerk/Treasurer
- Fire Chief
- Wastewater Plant Superintendent
- Water/Sewer Superintendent
- Solid Waste Superintendent
- Street Superintendent
- Economic Development Director
- Library Board Chairperson

Capability Assessment

The planning team assessed the City of Titonka's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

193 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

194 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

195 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

Table TNK.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Economic Development Plan	No
	Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	No
	Floodplain Ordinance	Yes
	Building Codes	No
	Source Water Protection Plan	No
	Water System Emergency Response Plan	No
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	Yes
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	No
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	No
	Gas/Electric Service Fees	Yes
	Storm Water Service Fees	Yes
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No

Survey Components/Subcomponents		Yes/No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Table TNK.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Moderate
Staff/expertise to implement projects	High
Community support to implement projects	High
Time to devote to hazard mitigation	Moderate
Ability to expand and improve identified capabilities to achieve mitigation	Limited

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Titonka, is Relatively Low (56.35). The average for the State of Iowa is 43.31.¹⁹⁶

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources, and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can function as proxies for community capacity. The following table lists the components and scores for the City of Titonka compared to the county.

¹⁹⁶ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

Table TNK.4: Rural Capacity Index

Components of Index	City of Titonka	Kossuth County
County is Metropolitan?	No	No
Has a Head of Planning?	No	Yes
Has a College or University?	No	No
Adults with Higher Education:	11%	18%
Families Below Poverty Level:	17%	7%
Households with Broadband:	77%	78%
People without Health Insurance:	2%	5%
Voter Turnout:	80%	80%
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	-103	-2,350
Overall Rural Capacity Index Score (0-100)	44	66

Source: Headwaters Economics¹⁹⁷

National Flood Insurance Program (NFIP)

Titonka is a member of the NFIP, having joined on 9/1/1987. The initial FIRM for the city was delineated on 9/1/1987 and the current effective map date is 3/20/2018, which has been adopted and incorporated into the local floodplain management regulations (May 2018). As of September 30, 2022, there are no NFIP policies in-force for the city. Titonka does not currently have any repetitive loss or severe repetitive loss structures. The city requires permits for development in the floodplain.

According to the local planning team, the mayor serves as the local floodplain administrator. This position is responsible for Titonka's NFIP commitments and requirements, include enforcement of the local floodplain management regulations. The local planning team has said that Titonka will continue to pursue good standing and involvement with the NFIP in the future.

After a flood event, the community implements substantial improvement and substantial damage provisions as outlined in FEMA's Substantial Improvement/Substantial Damage Desk Reference, which can be found here:

https://www.fema.gov/sites/default/files/documents/fema_nfip_substantial-improvement-substantial-damage-desk-reference.pdf.

Due to the community's lower capacity, as noted in the Rural Capacity Index, when substantial damage determinations are needed, state resources should be sought, or a contractor hired to assist.

¹⁹⁷ Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.
<https://headwaterseconomics.org/equity/rural-capacity-map/>.

Plan Integration

Titonka has limited planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the city updates these planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

The City of Titonka's funds are currently limited to maintaining current facilities and municipal systems. A large portion of municipal funds have been dedicated to the installation of a new municipal well and water system improvements. The amount of municipal funds has decreased in recent years. The city was awarded CDBG funding for well and water treatment plant improvements.

Floodplain Regulations (2018) and Zoning Ordinance (2024)

The city's floodplain regulations and zoning ordinance outline where and how development should occur in the future. These documents prohibit some development within the floodplain, discourage development in the floodplain, include well setback requirements, and include the ability to implement water restrictions. In future document updates, the city plans to discourage development near chemical storage sites and along major transportation routes. It also plans to consider wildfire and the wildland urban interface in future updates. There is no timeline to update any of these documents.

Wellhead Protection Plan

The purpose of wellhead protection plans is to protect the public drinking water supply wells from contamination. It includes identifying potential sources of groundwater contamination in the area.

Future Development Trends

In the last five years, the city has replaced roads in the community as needed. No new structures were developed in the floodplain or other hazardous area. There are no new housing or commercial developments planned for the next five years. The city's overall vulnerability has not been affected by changes in development.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communications; Transportation; and Hazardous Material facilities.



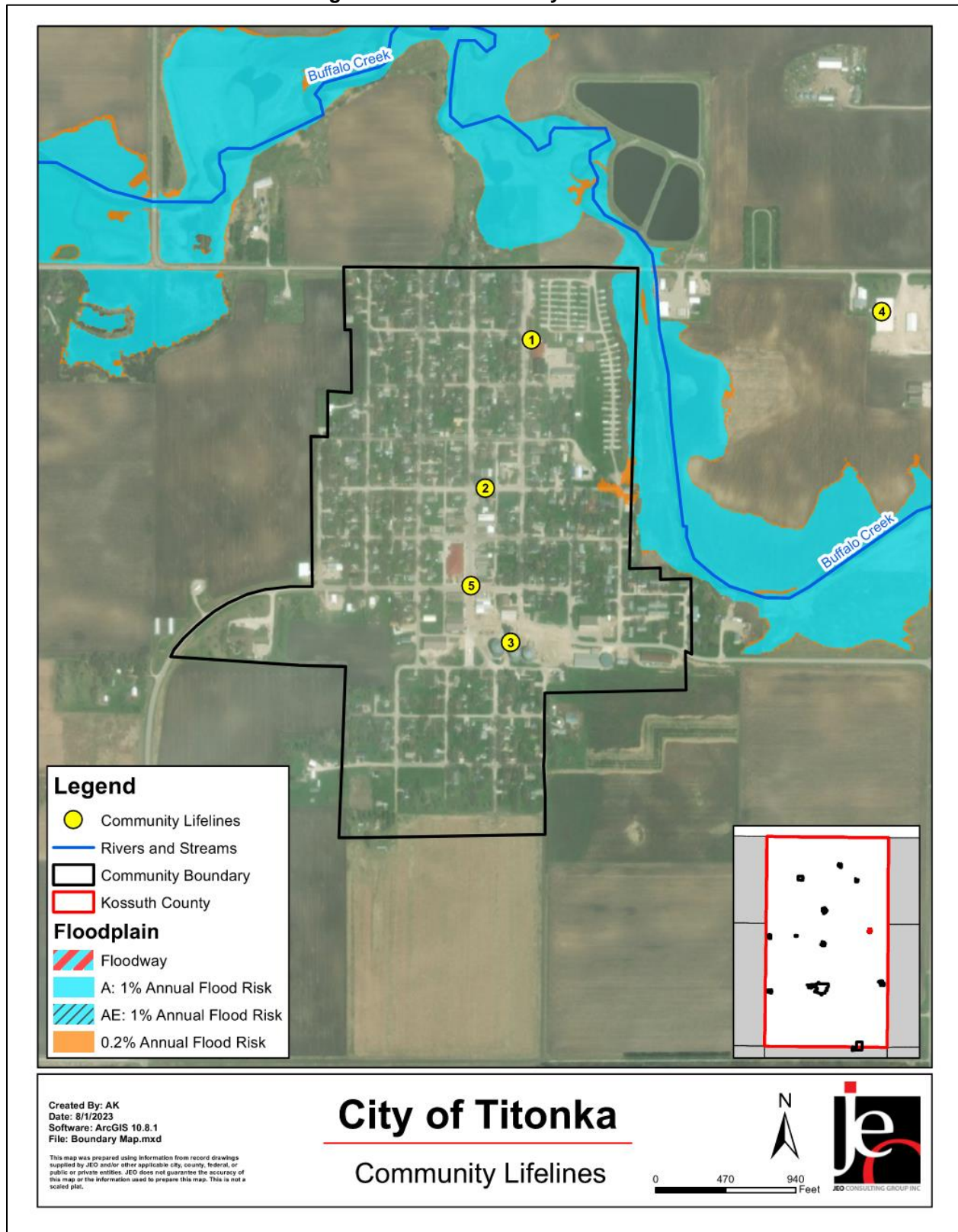
Table TNK.5: Community Lifelines

CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	City Hall	Safety and Security	S	N
2	Emergency Services Building	Health and Medical	G, S	N
3	Gold-Eagle Cooperative, Titonka Facility - #14591	Hazardous Material	-	N
4	K.C. Nielsen Ltd – Titonka Iowa	Hazardous Material	-	N
5	Titonka Cardtrol	Hazardous Material	-	N

Source: Local Planning Team, E-Plan¹⁹⁸

198 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure TNK.4: Community Lifelines



Transportation

Titonka's major transportation routes include County Roads P64 and B14. The most traveled route is County Road B14 with an average of 610 vehicles daily.¹⁹⁹ Titonka has no rail lines and no airport nearby.²⁰⁰ The local planning team indicated that two bridges on 210th Avenue south of the city have been or are being replaced, closing those sections of roadway. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. According to the National Pipeline Mapping System, there are no gas transmission pipelines or hazardous liquid pipelines that travel near community.²⁰¹

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are three chemical storage sites within or near Titonka that contain hazardous materials (listed in Table TNK.5). According to the local planning team, agriculture-related chemicals are regularly transported along local routes.

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of October 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Table TNK.6: Titonka Parcel Improvements and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
300	\$22,965,043	2	\$215,440	1%

Source: County Assessor, 2023

Table TNK.7: Titonka Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
300	\$22,965,043	4	\$489,588	1%

Source: County Assessor, 2023

Table TNK.8: Titonka Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000A	3/20/2018	Flood Insurance Study

Source: FEMA Flood Map Service Center²⁰²

199 Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

200 Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023.

<https://iowadot.gov/aviation/airport-information>.

201 National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

202 Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Drought

Drought was chosen as a top hazard of concern due to the ongoing drought affecting the area. Impacts from the drought include damaged crops, Buffalo Creek drying up, and other water issues in the city. The city has the authority to implement water restrictions whenever water supply appears to be inadequate. Flow meters are installed at all homes and businesses. The fire department's water supply has not been impacted by drought.

Severe Thunderstorms (includes Hail & Lightning)

Severe thunderstorms are a regular part of the climate and weather in the Midwest. These storms can cause damage through heavy rain, lightning strikes, hail, and high winds. The NCEI reports 13 instances of severe thunderstorms that occurred in Titonka from 1996 to January 2023. These storm events resulted in \$224,000 in property damage, with no injuries or deaths. Some impacts from severe thunderstorms include damage to buildings, tree damage, and crop damage. A backup generator is currently needed at city hall. Approximately 25% of power lines are currently buried.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for Titonka. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. The local planning team indicated that this hazard often results in residents getting snowed into their homes and limiting mobility, especially for elderly residents. To reduce the impacts of this hazard, the local planning team noted that adding a backup generator to the Buffalo Creek Activity Center would be beneficial. The fire station can serve as a warming shelter if required.

Tornado and Windstorm

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and no tornadoes in Titonka. Past impacts include building and other property damage, tree damage, and crop damage.

Mitigation Strategy

Completed Mitigation and Strategic Actions

Mitigation Action	Amend Floodplain Regulations to Remain in NFIP
Description	Recently, FEMA and IDNR completed an update to the Kossuth County flood insurance rate maps (FIRMs). To maintain good standing with the NFIP, the city must amend floodplain regulations to reference the effective date of the new maps, which is 3/20/2018.
Hazard(s)	Flooding
Status	Updated floodplain ordinance adopted in May 2018.

Continued Mitigation and Strategic Actions

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited resources/funding.

Mitigation Action	Continuity of Operations Plan (COOP)
Description	Develop a Continuity of Operations Plan to use during a disaster that provides a means to continue operations, who is in charge, where to set up control and command, etc.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited resources/funding.

Mitigation Action	Emergency Management Plans
Description	Develop/update/publicize emergency management plans, including preparedness, response recover, operations, long term recovery, and mitigation plans and maintain data inventory
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Low
Lead Agency/Department	EMA, Mayor
Status	This project is on hold due to limited resources/funding.

Mitigation Action	Wastewater System Improvements
Description	Construct, retrofit, or maintain wastewater infrastructure to ensure its proper functioning.
Hazard(s)	Flooding, Human Infectious Disease, Infrastructure Failure
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited resources/funding.

Mitigation Action	Enhance Security Measures
Description	Install and maintain security measures at all critical facilities.
Hazard(s)	Terrorism and Civil Unrest
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	Some new updates to the water treatment plant will include updated security measures.

Mitigation Action	Emergency Response Training
Description	Conduct training for emergency response personnel
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	Fire Department is regularly trained in emergency response, but city would like to expand on that. Currently on hold due to limited resources/funding.

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	EMA, Public Safety
Status	This project is on hold due to limited resources/funding.

Removed Mitigation and Strategic Actions

Mitigation Action	Flood Protection
Description	Construct levees, dams, and/or culverts to ensure adequate capacity and protection levels for property and critical facilities.
Hazard(s)	Flooding
Reason for Removal	This project is no longer a priority for the city.

Mitigation Action	Flood-prone Property Acquisition
Description	Acquire flood prone properties for conversion into green space; or elevate structures to or above base flood elevation.
Hazard(s)	Flooding
Reason for Removal	This project is no longer a priority for the city.

Mitigation Action	Heating/Cooling Centers
Description	Build or designate dedicated heating and cooling centers/shelters
Hazard(s)	Extreme Temperatures
Reason for Removal	This project is no longer a priority for the city.

Mitigation Action	Safe Rooms
Description	Construct or retrofit existing structures into public safe rooms at government facilities, recreational facilities, recreational areas, manufactured home parks, schools, childcare centers, and other critical facilities
Hazard(s)	Tornado and Windstorm, Severe Thunderstorms, Severe Winter Storms
Reason for Removal	This project is no longer a priority for the city.

Mitigation Action	Stormwater and Drainage Improvements
Description	Drainage improvements may include ditch upsizing, ditch cleanout, and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates. Cleanout and reshaping of channel segments at bridge crossings can increase conveyance and reduce flooding potential.
Hazard(s)	Flooding, Infrastructure Failure
Reason for Removal	This project is no longer a priority for the city.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the City Council, City Clerk, City Superintendent, and the Fire Chief. The plan will be reviewed and updated bi-annually. The public will be involved in the review and revision process at city council meetings.

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Community Profile

City of Wesley

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table WES.1: Wesley Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Craig Larson	Mayor	City of Wesley	Round 1 & 2

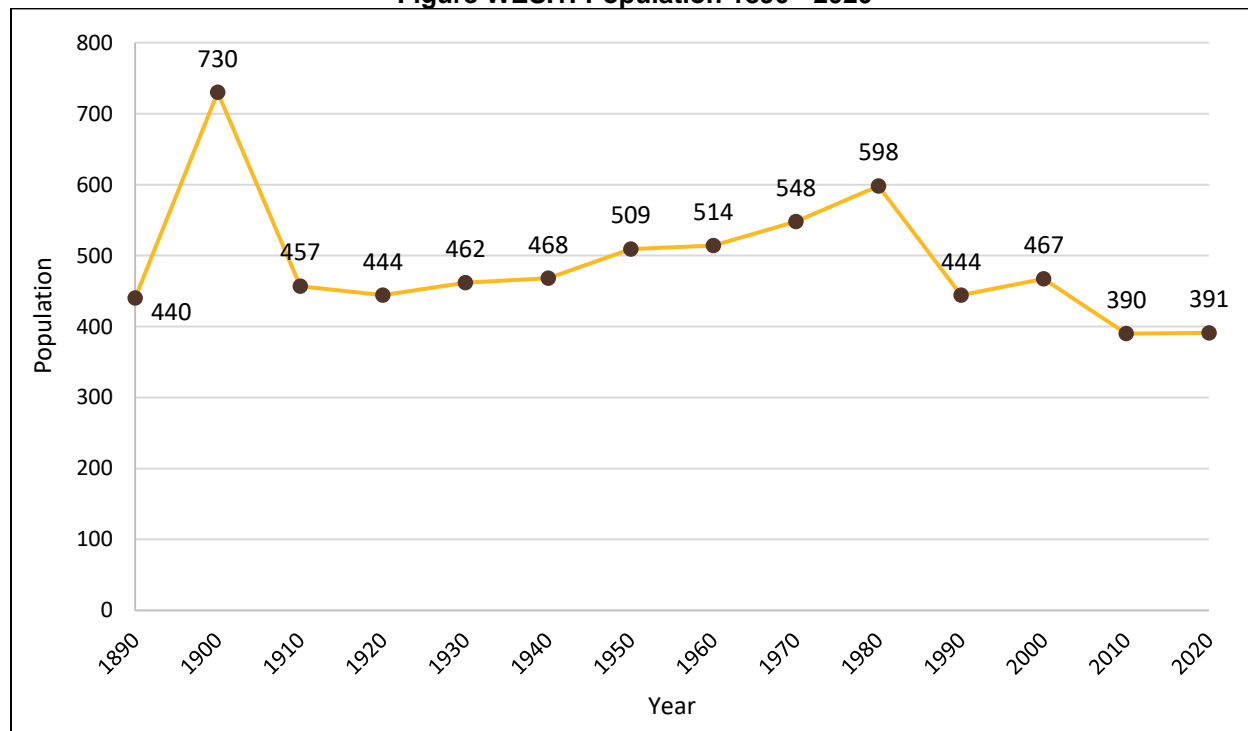
Location and Geography

The City of Wesley is located in southeast Kossuth County and covers an area of 0.58 square miles. The main waterway in the area is Prairie Creek, which runs along the northern and western edges of the city.

Demographics

Wesley's estimated population in 2021 was 378. The following figure displays the historical population trend from 1890 to 2020. This figure indicates that the population of Wesley has fluctuated over the past few decades but has recently seen an increase. Increasing populations are associated with more robust hazard mitigation and emergency planning requirements for development. Growing populations can also increase tax revenues, allowing communities to pursue additional mitigation projects. Wesley's population accounted for 2.6% of Kossuth County's population in 2021.²⁰³

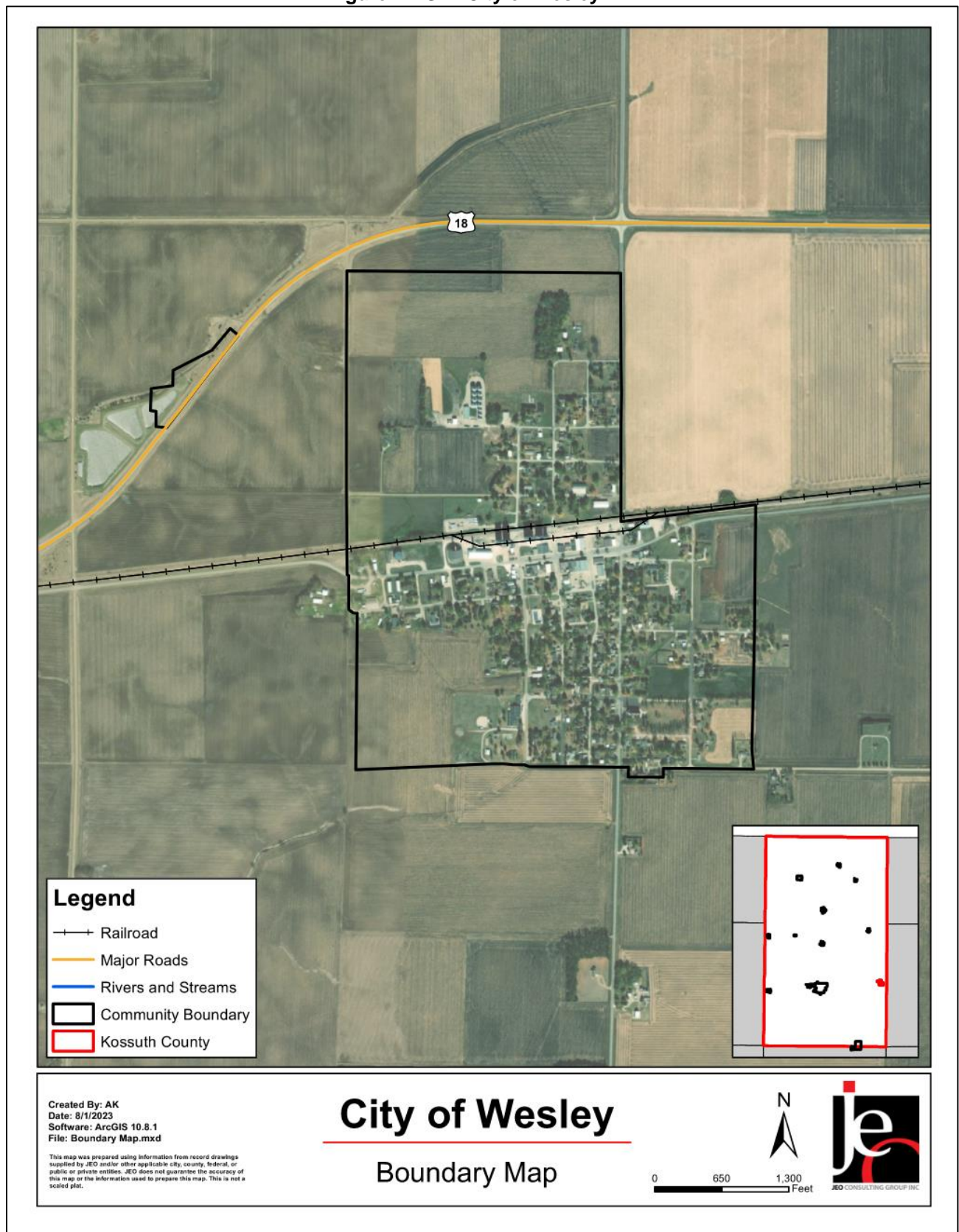
Figure WES.1: Population 1890 - 2020



Source: U.S. Census Bureau

203 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Figure WES.2: City of Wesley

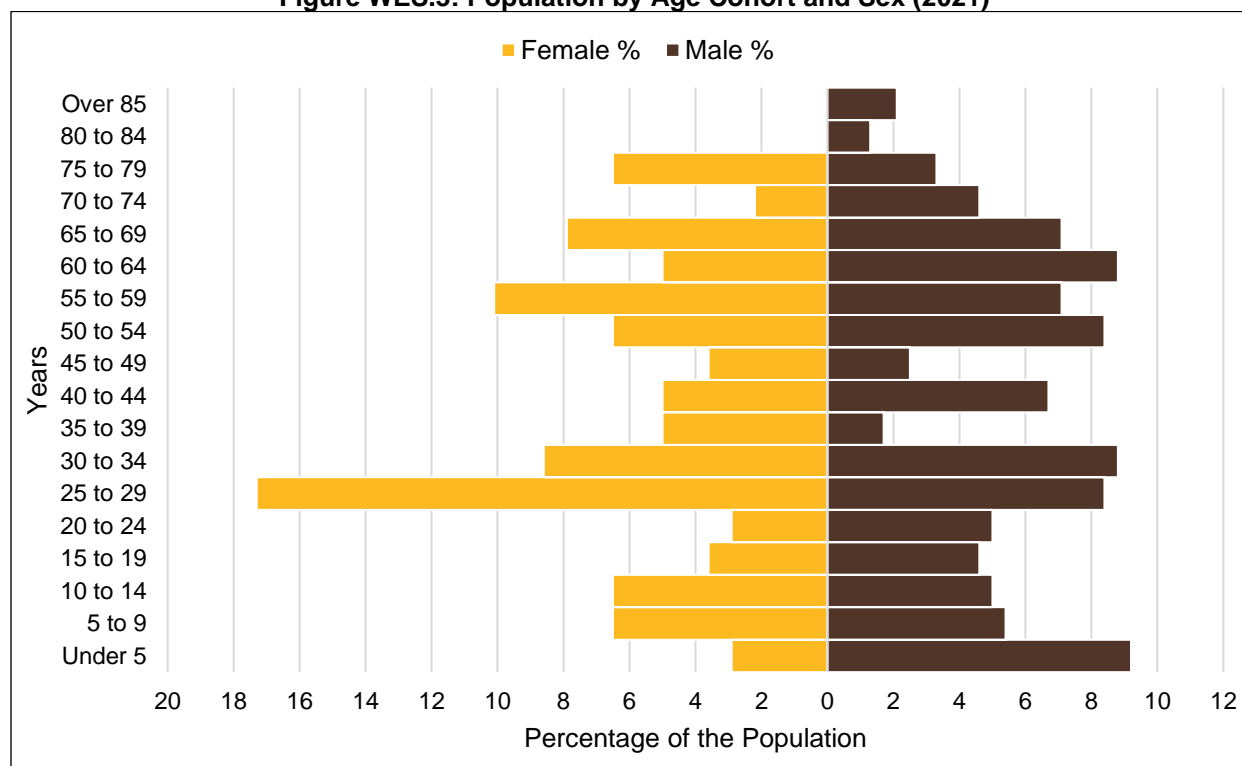


Section Seven: City of Wesley Community Profile

The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Wesley's population:

- **4.8% is non-white.** Since 2010, Wesley became more racially diverse. In 2010, 0.5% of the Wesley's population was non-white. By 2021, 4.8% was non-white.²⁰⁴
- **Median age of 39.5.** The median age of Wesley was 39.5 years old in 2021. The population became younger since 2010, when the median age was 48.7.²⁰⁵

Figure WES.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau²⁰⁶

The figure above shows Wesley's population percentage broken down by sex and five-year age groups. Wesley's population is similarly spread throughout most age groups. This indicates that the population is likely to remain stable in the future.

204 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

205 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

206 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Wesley's population has:

- **15.3% of people living below the poverty line.** The poverty rate (15.3%) in the City of Wesley was higher than the state's poverty rate (11%) in 2021.²⁰⁷
- **\$59,018 median household income.** Wesley's median household income in 2021 (\$59,018) was \$6,411 lower than the state (\$65,429).²⁰⁸
- **9.2% unemployment rate.** In 2021 Wesley had a higher unemployment rate (9.2%) when compared to the state (3.9%).²⁰⁹
- **27.6% of workers commuted 30 minutes or more to work.** Fewer workers in Wesley commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (27.6% compared to 32.4%).²¹⁰

Major Employers

The main employers in Wesley include Gold Eagle Cooperative and the City of Wesley. According to the local planning team, a large percentage of residents commute to other cities for work, such as Forest City, Algona, and Britt.

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Wesley's housing stock has:

- **67.9% of housing built prior to 1970.** Wesley has a greater share of housing built prior to 1970 than the state (67.9% compared to 49.9%).²¹¹
- **4.8% of housing units vacant.** Wesley has a lower vacancy rate (4.8%) compared to the rest of the state (9.3%).²¹²

207 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

208 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

209 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

210 United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

211 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

212 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

Section Seven: City of Wesley Community Profile

- **3% mobile and manufactured housing.** The City of Wesley has a smaller share of mobile and manufactured housing (3%) compared to the state (3.5%).²¹³
- **10.8% renter-occupied.** The rental rate of Wesley was 10.8% in 2021. This is lower than the state's rate of 28.4%.²¹⁴

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **87.9% of households have a broadband internet subscription.** Wesley has a greater share of households with broadband (87.9%) compared to the state (84.9%).²¹⁵

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Wesley has a mayor, a five-member city council, and the following offices.

- Clerk/Treasurer
- Attorney
- Fire Chief
- Wastewater Plant Superintendent
- Water/Sewer Superintendent
- Solid Waste Superintendent
- Street Superintendent
- Parks Superintendent

Capability Assessment

The planning team assessed the City of Wesley's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

213 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

214 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

215 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

Table WES.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	No
	Economic Development Plan	No
	Emergency Operations Plan	No
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	No
	Subdivision Regulation/Ordinance	No
	Floodplain Ordinance	Yes
	Building Codes	No
	Source Water Protection Plan	Yes
	Water System Emergency Response Plan	Yes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	No
	Floodplain Administration	Yes
	GIS Capabilities	No
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	Yes
	Mutual Aid Agreement	No
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	Yes
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No

Survey Components/Subcomponents		Yes/No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Table WES.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Moderate
Staff/expertise to implement projects	Limited
Community support to implement projects	Moderate
Time to devote to hazard mitigation	Limited
Ability to expand and improve identified capabilities to achieve mitigation	Moderate

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Wesley, is Relatively Low (56.35). The average for the State of Iowa is 43.31.²¹⁶

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources, and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can function as proxies for community capacity. The following table lists the components and scores for the City of Wesley compared to the county.

²¹⁶ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

Table WES.4: Rural Capacity Index

Components of Index	City of Wesley	Kossuth County
County is Metropolitan?	No	No
Has a Head of Planning?	No	Yes
Has a College or University?	No	No
Adults with Higher Education:	9%	18%
Families Below Poverty Level:	9%	7%
Households with Broadband:	71%	78%
People without Health Insurance:	4%	5%
Voter Turnout:	80%	80%
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	-105	-2,350
Overall Rural Capacity Index Score (0-100)	43	66

Source: Headwaters Economics²¹⁷

National Flood Insurance Program (NFIP)

Wesley is a member of the NFIP, having joined on 3/29/2019. The initial FIRM for the city was delineated on 3/20/2018 and the current effective map date is 3/20/2018, which has been adopted and incorporated into the local floodplain management regulations. As of September 30, 2022, there are no NFIP policies in-force for the city. Wesley does not currently have any repetitive loss or severe repetitive loss structures. The city requires permits for development in the floodplain.

According to the planning team, the mayor serves as the local floodplain administrator. This position is responsible for Wesley's NFIP commitments and requirements, include enforcement of the local floodplain management regulations. The local planning team has said that Wesley will continue to pursue good standing and involvement with the NFIP in the future.

After a flood event, the community implements substantial improvement and substantial damage provisions as outlined in FEMA's Substantial Improvement/Substantial Damage Desk Reference, which can be found here:

https://www.fema.gov/sites/default/files/documents/fema_nfip_substantial-improvement-substantial-damage-desk-reference.pdf.

Due to the community's lower capacity, as noted in the Rural Capacity Index, when substantial damage determinations are needed, state resources should be sought, or a contractor hired to assist.

Plan Integration

Wesley has limited planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the city updates these planning

²¹⁷ Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.
<https://headwaterseconomics.org/equity/rural-capacity-map/>.

mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

The City of Wesley's funds are sufficient to pursue new capital projects, according to the local planning team. A large portion of municipal funds have been dedicated to a water main improvement project. The amount of municipal funds has increased in recent years. The sewer and water improvement projects identified in the hazard mitigation plan are also included in the municipal budget.

Comprehensive Plan (2023)

The comprehensive plan is designed to guide the future actions and growth of the city. The plan contains goals/objectives aimed at Safe Growth, limits density in areas adjacent to known hazardous areas, and identifies areas that need emergency shelters. In a future update, the plan will encourage infill development. The city plans to incorporate information from the hazard mitigation plan into its next comprehensive plan update. Currently there is no plan or timeline for the next update of the city's comprehensive plan.

Floodplain Regulations and Zoning Ordinance (2023)

The city's floodplain regulations and zoning ordinance outline where and how development should occur in the future. There is no timeline to update any of these documents.

Capital Improvement Plan (2023)

The purpose of the capital improvement plan is for the city to strategize how to budget for nonrecurring physical or digital purchases. A capital improvement plan typically spans multiple years and includes financing plans. There is currently no timeline to update this plan.

Wellhead Protection Plan (2023)

The purpose of wellhead protection plans is to protect the public drinking water supply wells from contamination. It includes identifying potential sources of groundwater contamination in the area.

Water System Emergency Response Plan (2020)

Water system emergency response plans ensure the drinking water systems that serve the City of Wesley are prepared to supply customers with drinking water in the event of an emergency. It includes identifying potential emergencies and how the utility will ensure water delivery in specific scenarios.

Future Development Trends

In the past five years, there was one new house built and three streets re-paved. No new structures were developed in the floodplain or other hazardous area. A new feed plant (Gold Eagle) is planned for the area in the next five years. The city's overall vulnerability has not been affected by changes in development; however, the location of the new feed plant could increase vulnerability depending on its proximity to the community and its proximity to the floodplain or other hazardous area.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communications; Transportation; and Hazardous Material facilities.



Table WES.5: Community Lifelines

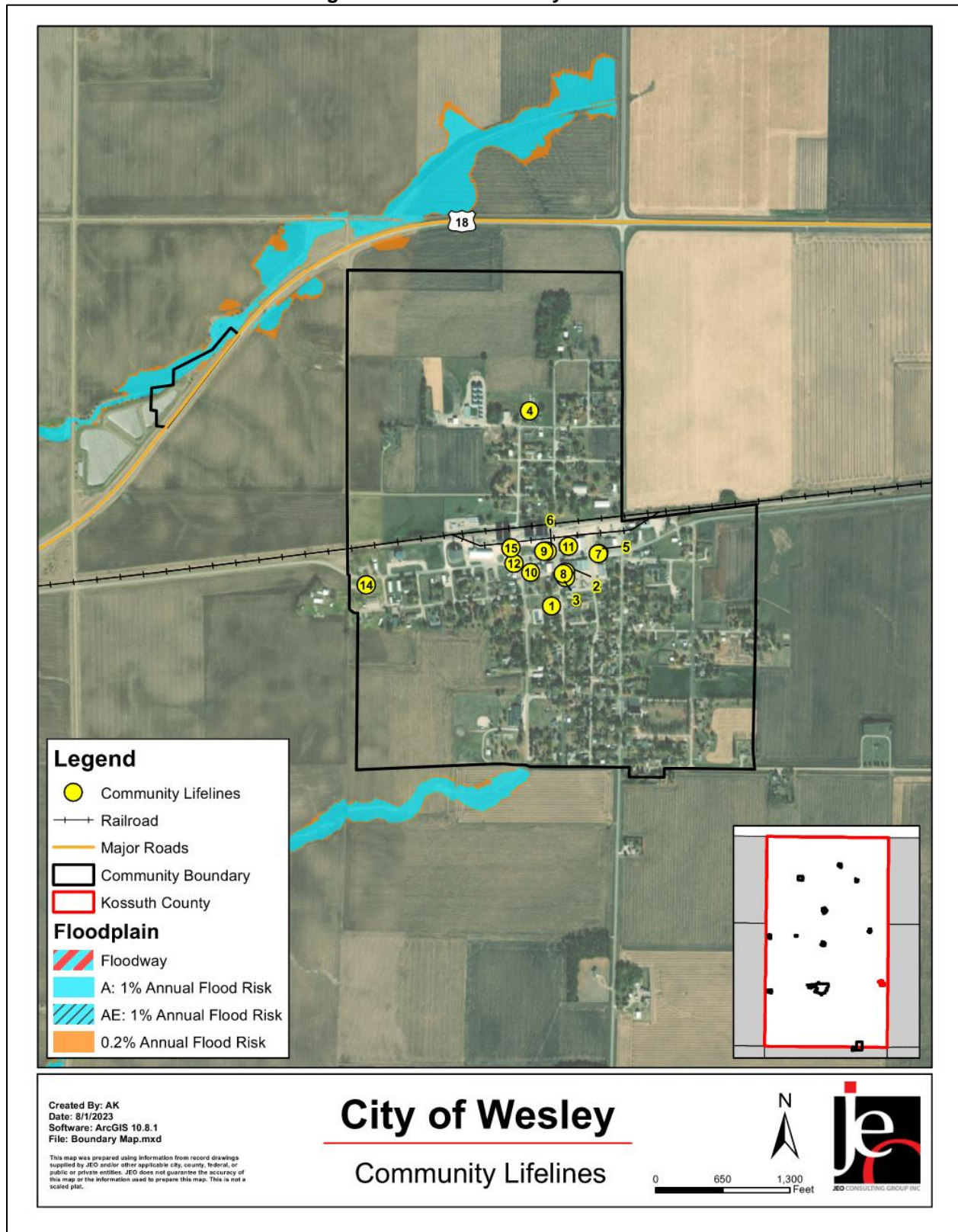
CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	Wells	Food, Water, and Shelter	-	N
2	Water Tower	Food, Water, and Shelter	G	N
3	Alert Siren	Communications	G	N
4	Power Substation	Energy	-	N
5	Wesley Clinic	Health and Medical	S	N
6	Fire Station	Safety and Security	S	N
7	EMS Shed	Health and Medical	S	N
8	City Hall	Safety and Security	G, S	N
9	Community Center	Food, Water, and Shelter	S	N
10	CenturyLink - Wesley CDO	Hazardous Material	-	N
11	Gold-Eagle Cooperative, Wesley Facility - #11490	Hazardous Material	-	N
12	Wesley Classic Stop	Hazardous Material	-	N
13*	Wesley East LP Plant	Hazardous Material	-	N
14	Wesley In Town LP Plant	Hazardous Material	-	N
15	Wesley Office	Hazardous Material	-	N

Source: Local Planning Team, E-Plan²¹⁸

*Community Lifeline located outside of map viewing area.

218 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure WES.4: Community Lifelines



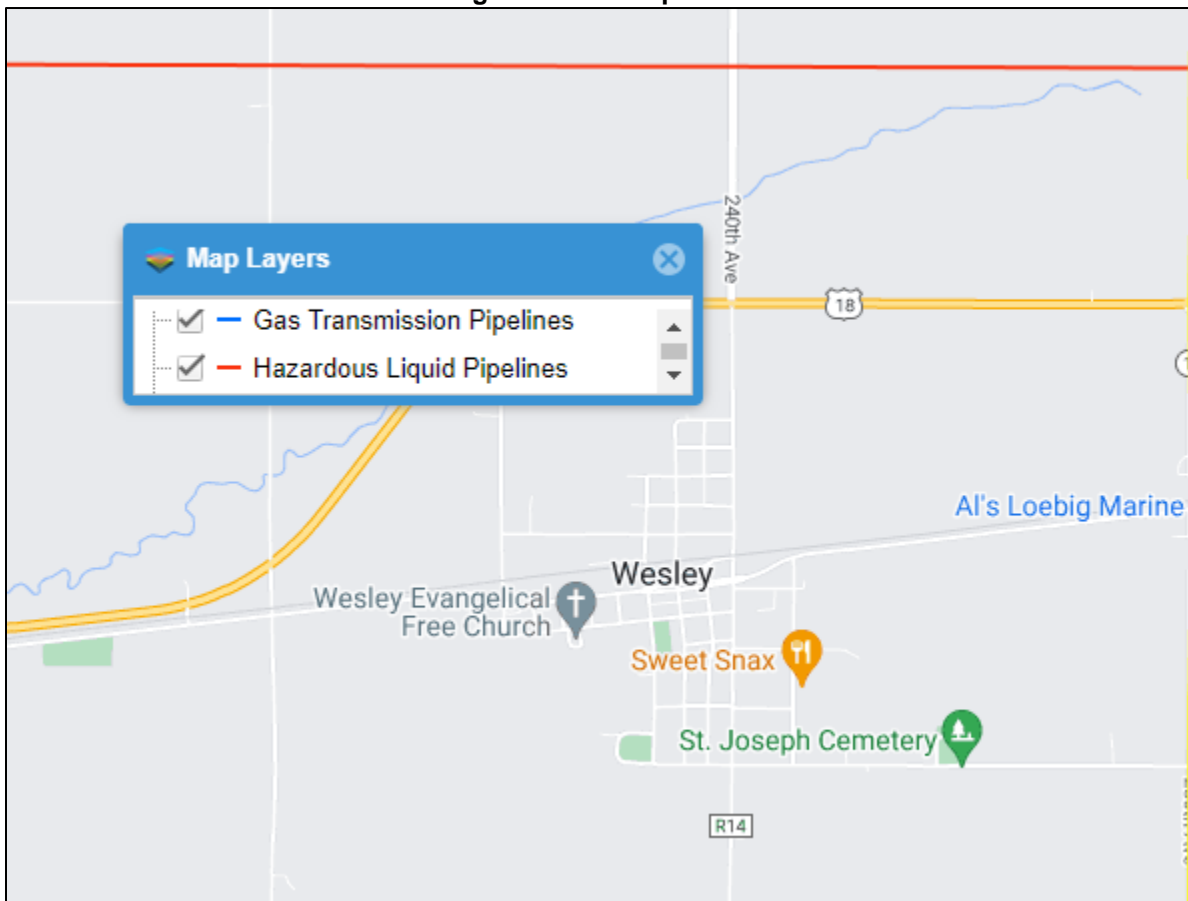
Transportation

Wesley's major transportation routes include U.S. Highway 18, State Highway 17, and County Road R14. The most traveled route is Highway 18 with an average of 2,620 vehicles daily, 630 of which are trucks.²¹⁹ Wesley has a Canadian Pacific rail line that runs east-west through the city. The Algona Municipal Airport is located about 13 miles west of Wesley.²²⁰ Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. There is one hazardous liquid pipeline that travels near the community. This can be seen on Figure WES.5. The team noted that no significant chemical spills have happened in Wesley.

Figure WES.5: Pipelines



Source: National Pipeline Mapping System²²¹

219 Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

220 Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023.

<https://iowadot.gov/aviation/airport-information>.

221 National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

Section Seven: City of Wesley Community Profile

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are six chemical storage sites within or near Wesley that contain hazardous materials (listed in Table WES.5).

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of October 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Table WES.6: Wesley Parcel Improvements and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
245	\$23,468,397	0	-	-

Source: County Assessor, 2023

Table WES.7: Wesley Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
245	\$23,468,397	0	-	-

Source: County Assessor, 2023

Table WES.8: Wesley Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000A	3/20/2018	Flood Insurance Study

Source: FEMA Flood Map Service Center²²²

222 Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Flooding

According to the NCEI, there were four flood events in Wesley from 1996 to January 2023. These events resulted in \$270,000 in property damage, but no injuries or fatalities. The local planning team indicated that flooding in 2018 impacted the community. In 2013 the city built a drainage ditch through the city to reduce risk to flooding. Sewer work may be needed in the future to reduce further risk.

As noted above, Wesley is a member of the NFIP, having joined on 3/29/2019. The initial FIRM for the city was delineated on 3/20/2018 and the current effective map date is 3/20/2018, which has been adopted and incorporated into the local floodplain management regulations.. As of September 30, 2022, there are no NFIP policies in-force for the city. Wesley does not currently have any repetitive loss or severe repetitive loss structures.

According to the Risk Factor website, Wesley has a minor risk of flooding, with eight properties and one mile of road having a greater than 26% chance of being severely affected by flooding over the next 30 years. That risk is unlikely to change in the next 30 years.²²³

Human Infectious Diseases

This hazard was selected as a top concern because of the recent COVID-19 pandemic. During an event such as COVID, staffing shortages can severely affect communities. During the recent pandemic, the city set up sanitation stations for large events in the community such as RAGBRAI. The local planning team indicated that the city is in need of PPE.

Infrastructure Failure

The local planning team selected this as a top hazard due to the overall bad state of the city's streets. The city has re-paved three streets in the past five years and plans to continue re-paving efforts as funding allows.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for Wesley. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. The local planning team noted that a 2018 blizzard impacted the city and caused a power outage. The city has a snow ordinance in place and has a winter storm shelter.

Tornado and Windstorm

223 Risk Factor. "Flood Factor: Wesley, Iowa". Accessed January 2024. https://riskfactor.com/city/wesley-ia/1983415_fsid/flood.

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and no tornadoes in Wesley. To reduce vulnerability to the hazard, the city designated the community center as an official storm shelter. The city also rebuilt its alert siren to be louder than it was previously.

Mitigation Strategy

Completed Mitigation and Strategic Actions

Mitigation Action	Safe Rooms
Description	Construct or retrofit existing structures into public safe rooms at government facilities, recreational facilities, recreational areas, manufactured home parks, schools, childcare centers, and other critical facilities
Hazard(s)	Tornado and Windstorm, Severe Thunderstorms, Severe Winter Storms
Status	Completed.

Mitigation Action	Heating/Cooling Centers
Description	Build or designate dedicated heating and cooling centers/shelters
Hazard(s)	Extreme Temperatures
Status	Completed.

Mitigation Action	Alert/Warning Siren
Description	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens, where needed, with remote activation options.
Hazard(s)	Tornado and Windstorm
Status	Completed.

New Mitigation and Strategic Actions

Mitigation Action	Acquire Additional PPE
Description	Acquire additional personal protective equipment (PPE) to have on hand in the case of a human infectious disease outbreak.
Hazard(s)	Human Infectious Diseases
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor
Status	Not started

Continued Mitigation and Strategic Actions

Mitigation Action	Emergency Management Plans
Description	Develop/update/publicize emergency management plans, including preparedness, response recover, operations, long term recovery, and mitigation plans and maintain data inventory
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Medium
Lead Agency/Department	EMA, Mayor
Status	In progress.

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Medium
Lead Agency/Department	EMA, Public Safety
Status	Not started

Mitigation Action	Stormwater System and Drainage Improvements
Description	Drainage improvements may include ditch upsizing, ditch cleanout, and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates. Cleanout and reshaping of channel segments at bridge crossings can increase conveyance and reduce flooding potential.
Hazard(s)	Flooding, Infrastructure Failure
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	High
Lead Agency/Department	Mayor, EMA
Status	In progress.

Mitigation Action	Wastewater System Improvements
Description	Construct, retrofit, or maintain wastewater infrastructure to ensure its proper functioning.
Hazard(s)	Flooding, Infrastructure Failure
Estimated Cost	\$100,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	In progress.

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	This project is on hold due to limited funding.

Mitigation Action	Promote Resiliency Through Codes and Regulations
Description	Develop and promote comprehensive, cost-effective, common-sense recommendations for adoption and enforcement of land use, ordinances and regulations, zoning, and building codes that decrease risk in areas susceptible to hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	5+ years
Priority	Low
Lead Agency/Department	EMA, Mayor, City Council
Status	Not started

Removed Mitigation and Strategic Actions

Mitigation Action	Enhance Security Measures
Description	Install and maintain security measures at all critical facilities.
Hazard(s)	Terrorism and Civil Unrest
Reason for Removal	Project is no longer a priority for the city.

Mitigation Action	Emergency Response Training
Description	Conduct training for emergency response personnel
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Reason for Removal	Project is no longer a priority for the city.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the Mayor. The plan will be reviewed and updated bi-annually. The public will be involved in the review and revision process through social media and/or council meetings.

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Community Profile

City of Whittemore

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table WHT.1: Whittemore Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Stu Simonsen	Mayor Pro-Tem/Council	City of Whittemore	Recordings
James Zinnel	Utilities Superintendent	City of Whittemore	-
Eric Goodman	Fire Chief	City of Whittemore	-

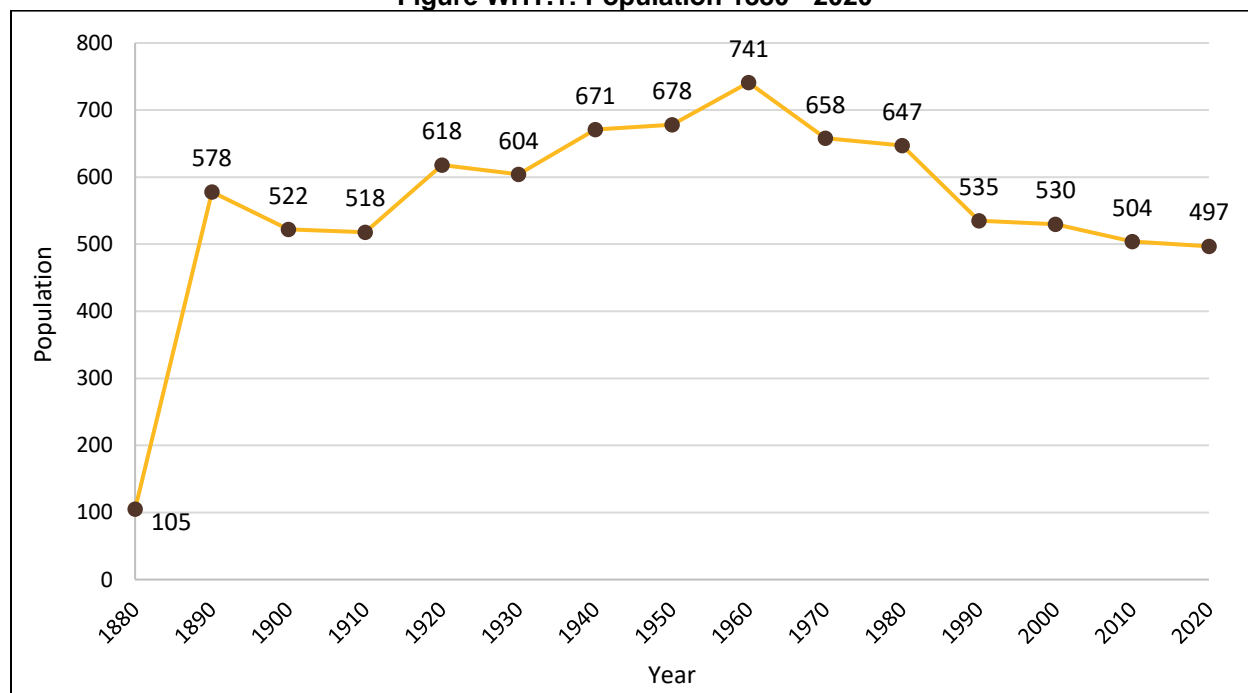
Location and Geography

The City of Whittemore is located in southwest Kossuth County and covers an area of 0.42 square miles. The main waterway in the area is Lotts Creek, which runs along the eastern edge of the city.

Demographics

Whittemore's estimated population in 2021 was 514. The following figure displays the historical population trend from 1880 to 2020. This figure indicates that the population of Whittemore has seen a decline since 1960. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which can make implementation of mitigation projects fiscally challenging. Whittemore's population accounted for 3.5% of Kossuth County's population in 2021.²²⁴

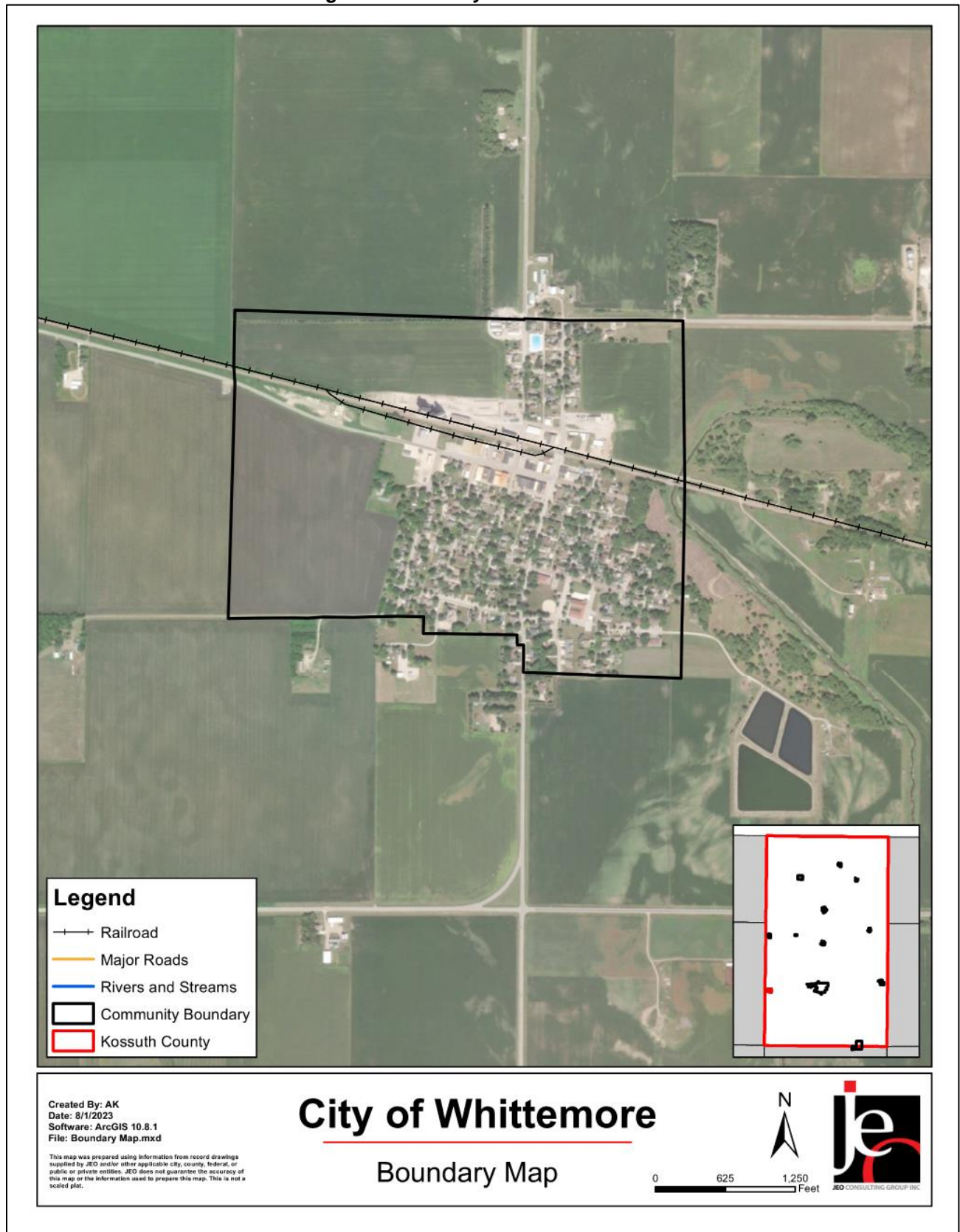
Figure WHT.1: Population 1880 - 2020



Source: U.S. Census Bureau

224 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Figure WHT.2: City of Whittemore

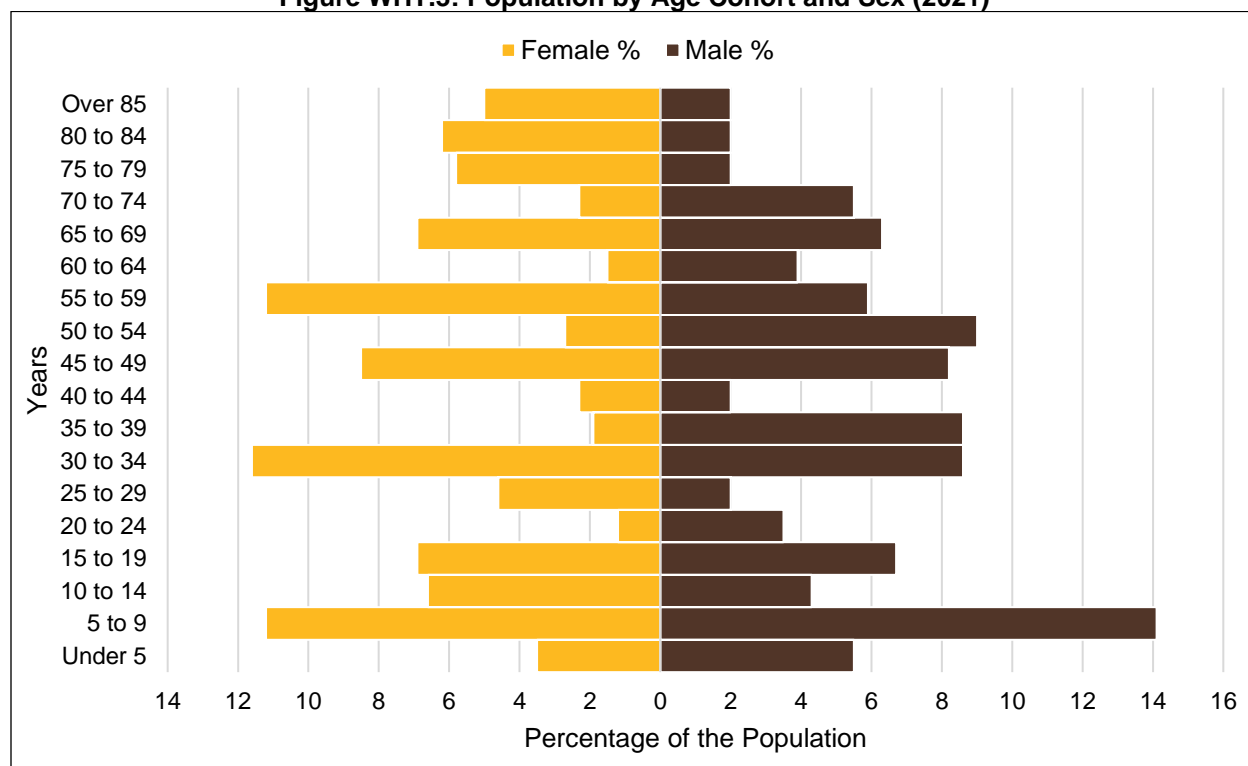


Section Seven: City of Whittemore Community Profile

The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Whittemore's population:

- **2.5% is non-white.** Since 2010, Whittemore became more racially diverse. In 2010, 2% of the Whittemore's population was non-white. By 2021, 2.5% was non-white.²²⁵
- **Median age of 39.** The median age of Whittemore was 39 years old in 2021. The population became older since 2010, when the median age was 33.4.²²⁶

Figure WHT.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau²²⁷

The figure above shows Whittemore's population percentage broken down by sex and five-year age groups. Whittemore's population is similarly spread throughout most age groups. This indicates that the population is likely to remain stable in the future.

225 United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

226 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

227 United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Whittemore's population has:

- **3.7% of people living below the poverty line.** The poverty rate (3.7%) in the City of Whittemore was lower than the state's poverty rate (11%) in 2021.²²⁸
- **\$69,432 median household income.** Whittemore's median household income in 2021 (\$69,432) was \$4,003 higher than the state (\$65,429).²²⁹
- **0% unemployment rate.** In 2021 Whittemore had a lower unemployment rate (0%) when compared to the state (3.9%).²³⁰
- **10% of workers commuted 30 minutes or more to work.** Fewer workers in Whittemore commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (10% compared to 31.1%).²³¹

Major Employers

Major employers in Whittemore include New Cooperative, J&J Custom Meats, Whittemore Feeders, and the City of Whittemore. According to the local planning team, a large percentage of residents commute to other communities for work, such as Algona, West Bend, and Emmetsburg.

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Whittemore's housing stock has:

- **71.7% of housing built prior to 1970.** Whittemore has a greater share of housing built prior to 1970 than the state (71.7% compared to 49.9%).²³²
- **14.3% of housing units vacant.** Whittemore has a higher vacancy rate (14.3%) compared to the rest of the state (9.3%).²³³

228 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

229 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

230 United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

231 United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

232 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

233 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

Section Seven: City of Whittemore Community Profile

- **0% mobile and manufactured housing.** The City of Whittemore has a smaller share of mobile and manufactured housing (0%) compared to the state (3.5%).²³⁴
- **9.9% renter-occupied.** The rental rate of Whittemore was 9.9% in 2021. This is lower than the state's rate of 28.4%.²³⁵

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **86.3% of households have a broadband internet subscription.** Whittemore has a greater share of households with broadband (86.3%) compared to the state (84.9%).²³⁶

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Whittemore has a mayor, a five-member city council, and the following offices.

- Clerk/Treasurer
- Deputy Clerk
- Attorney
- Fire Chief
- Utilities Superintendent
- Library Board Chairperson
- Parks Superintendent
- GIS/Zoning Administrator

234 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

235 United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

236 United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

Capability Assessment

The planning team assessed the City of Whittemore's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Table WHT.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	No
	Economic Development Plan	No
	Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	No
	Floodplain Ordinance	Yes
	Building Codes	Yes
	Source Water Protection Plan	Yes
	Water System Emergency Response Plan	Yes
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	No
	Floodplain Administration	No
	GIS Capabilities	Yes
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	Yes
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	No
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	No
	Gas/Electric Service Fees	No
	Storm Water Service Fees	Yes
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes

Survey Components/Subcomponents		Yes/No
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Table WHT.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Very Limited
Community support to implement projects	Limited
Time to devote to hazard mitigation	Limited
Ability to expand and improve identified capabilities to achieve mitigation	Limited

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Whittemore, is Relatively Low (56.35). The average for the State of Iowa is 43.31.²³⁷

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources, and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can

²³⁷ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

function as proxies for community capacity. The following table lists the components and scores for the City of Whittemore compared to the county.

Table WHT.4: Rural Capacity Index

Components of Index	City of Whittemore	Kossuth County
County is Metropolitan?	No	No
Has a Head of Planning?	No	Yes
Has a College or University?	No	No
Adults with Higher Education:	14%	18%
Families Below Poverty Level:	10%	7%
Households with Broadband:	76%	78%
People without Health Insurance:	1%	5%
Voter Turnout:	80%	80%
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	-33	-2,350
Overall Rural Capacity Index Score (0-100)	45	66

Source: Headwaters Economics²³⁸

National Flood Insurance Program (NFIP)

Whittemore has chosen not to participate in the NFIP at this time due to the low flood risk to community structures and because of the minimal impacts from historical flooding. NFIP participation will be reevaluated if the community's flood risk changes. The initial Flood Insurance Rate Map (FIRM) for Whittemore was delineated on 3/20/2018, which is also the current effective map date. Whittemore does not currently have any repetitive loss or severe repetitive loss structures.

Plan Integration

Whittemore has limited planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the city updates these planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the plan update.

Grants and Funding

The City of Whittemore's funds are currently limited to maintaining current facilities and municipal systems. A large portion of municipal funds have been dedicated to sewer improvements and paying off bonds. The amount of municipal funds has decreased in recent years. The city was awarded a CDBG grant for the city's sewer project in 2024.

²³⁸ Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.
<https://headwaterseconomics.org/equity/rural-capacity-map/>.

Floodplain Regulations (2017) and Zoning Ordinance

The city's floodplain regulations and zoning ordinance outline where and how development should occur in the future. In the future, the city would like to add regulations aimed at mitigating hazards. There is no timeline in place to update these documents.

Building Codes (1987)

The building code sets standards for constructed buildings and structures. These codes regulate and govern the conditions and maintenance of all property, buildings, and structures by providing the standards for supplied utilities, facilities, and other physical things and conditions essential to ensure that structures are safe, sanitary, and fit for occupation and use.

Wellhead Protection Plan (2012)

The purpose of wellhead protection plans is to protect the public drinking water supply wells from contamination. It includes identifying potential sources of groundwater contamination in the area.

Water System Emergency Response Plan (2020)

Water system emergency response plans ensure the drinking water systems that serve the City of Whittemore are prepared to supply customers with drinking water in the event of an emergency. It includes identifying potential emergencies and how the utility will ensure water delivery in specific scenarios.

Future Development Trends

In the last five years the city has welcomed a new business (J&J Custom Meats), demolished three homes, and lost a major employer (Albion/Balchem). No new structures were developed in the floodplain or other hazardous areas. The local planning team indicated that no new housing or business developments are currently planned for the next five years. The city's overall vulnerability may have been reduced by the demolition of dilapidated homes.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communications; Transportation; and Hazardous Material facilities.



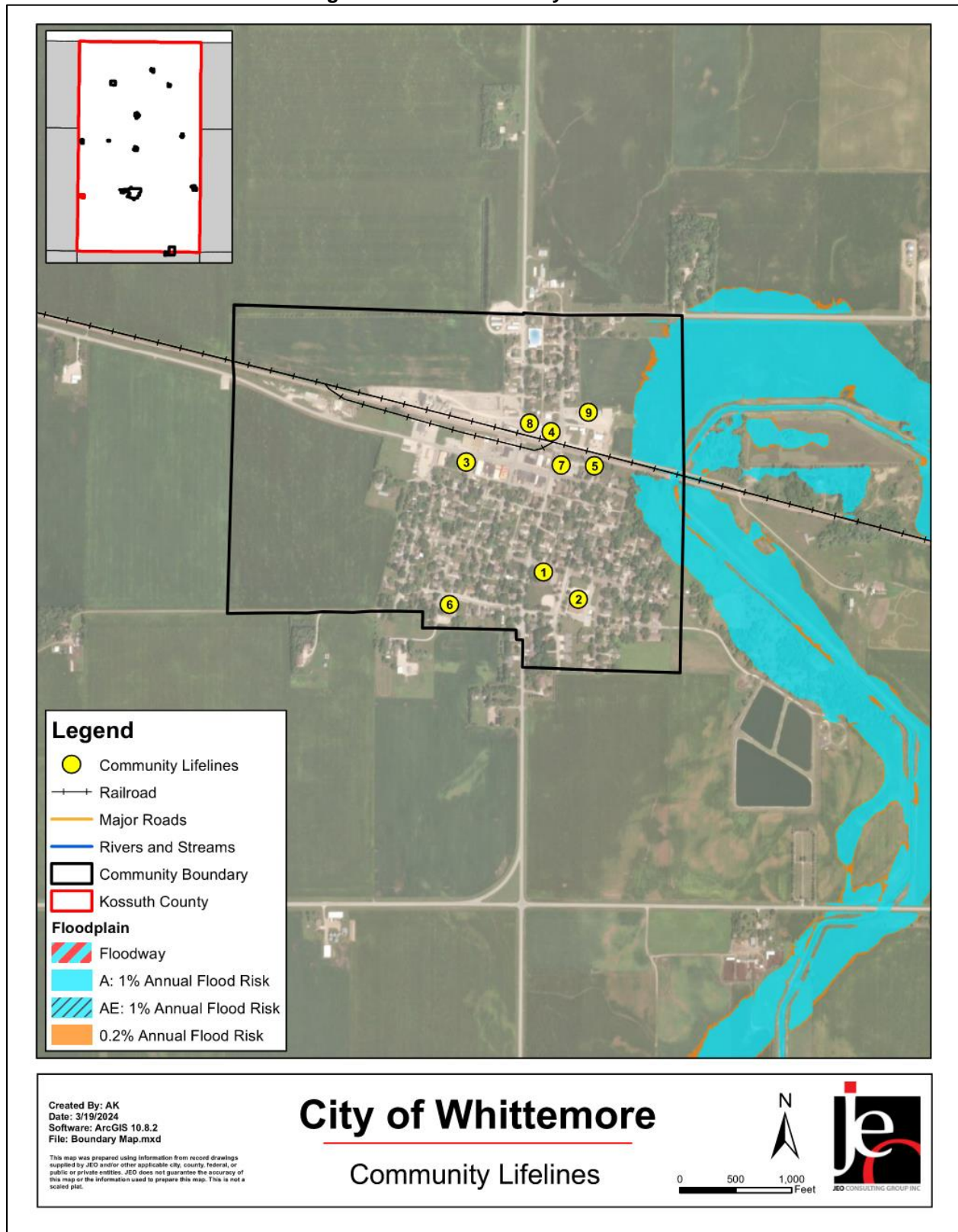
Table WHT.5: Community Lifelines

CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	Community Center	Food, Water, and Shelter	S	N
2	St Michael's Parish Center	Food, Water, and Shelter	S	N
3	American Legion Hall	Food, Water, and Shelter	S	N
4	Fire Station	Safety and Security	G	N
5	Water Plant	Food, Water, and Shelter	-	N
6	St Paul's Lutheran Church Basement	Food, Water, and Shelter	G, S	N
7	City Hall	Safety and Security	G, S	N
8	New Cooperative - Whittemore	Hazardous Material	-	N
9	New Cooperative, Inc., C-Store Whittemore	Hazardous Material	-	N

Source: Local Planning Team, E-Plan²³⁹

239 E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Figure WHT.4: Community Lifelines



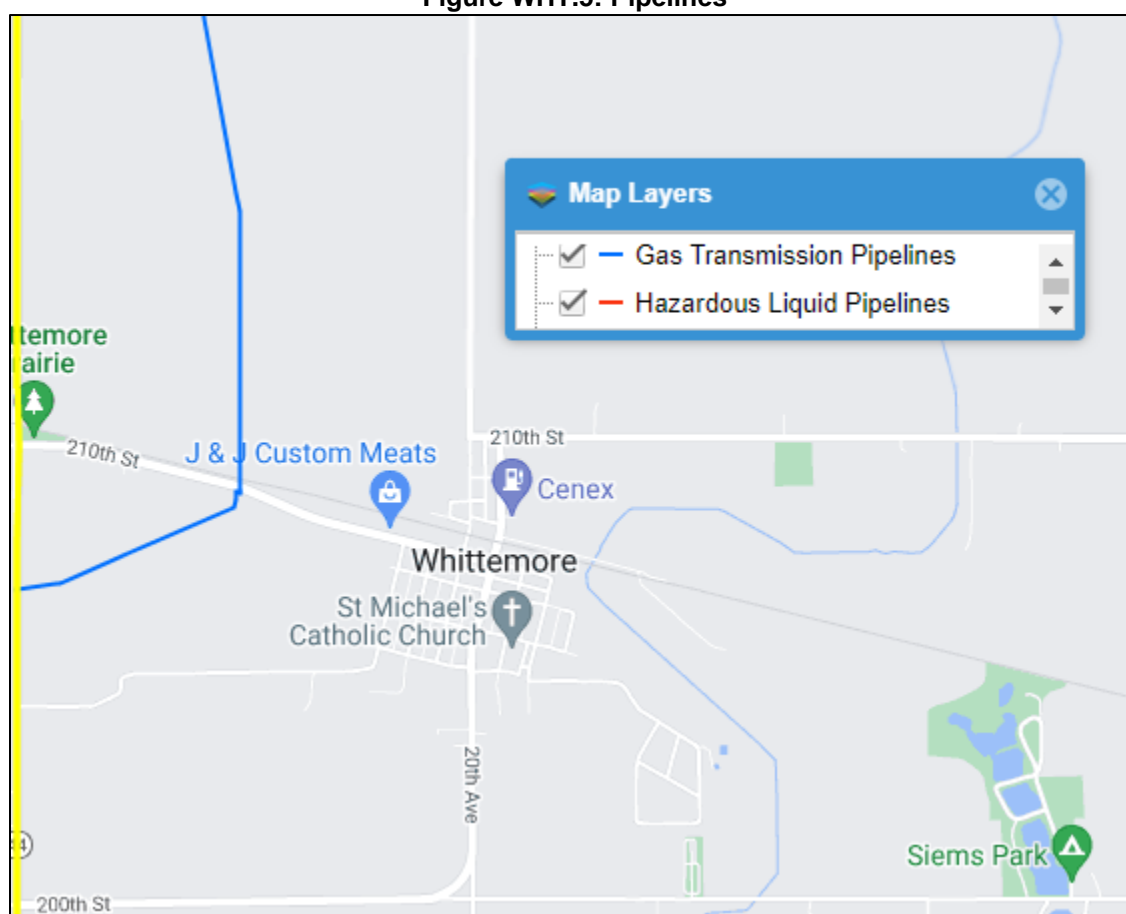
Transportation

Whittemore's major transportation routes include County Roads P16, B40, and B44. The most traveled route is County Road B40 with an average of 940 vehicles daily.²⁴⁰ Wesley has a Canadian Pacific rail line that runs east-west through the city. The Algona Municipal Airport is located about 7 miles east of Whittemore.²⁴¹ No significant transportation events have occurred locally, according to the local planning team. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. There is one gas transmission pipeline that travels near the community. This can be seen on Figure WHT.5.

Figure WHT.5: Pipelines



Source: National Pipeline Mapping System²⁴²

According to the local planning team and Tier II System reports submitted to the Iowa Department of Natural Resources, there are two chemical storage sites within or near Whittemore that contain

240 Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

241 Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023.

<https://iowadot.gov/aviation/airport-information>.

242 National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

hazardous materials (listed in Table WHT.5). The planning team indicated that ethanol and other unknown chemicals are regularly transported along local routes and the railroad. The team noted that no significant chemical spills have happened in Whittemore.

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of October 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Table WHT.7: Whittemore Parcel Improvements and Value in the 1% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
281	\$27,317,338	3	\$446,417	1%

Source: County Assessor, 2023

Table WHT.8: Whittemore Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Total Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	% of Improvements in Floodplain
281	\$27,317,338	4	\$672,566	1%

Source: County Assessor, 2023

Table WHT.9: Whittemore Flood Map Products

Type of Product	Product ID	Effective Date	Details
FIS Report	19109CV000A	3/20/2018	Flood Insurance Study

Source: FEMA Flood Map Service Center²⁴³

243 Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Drought

Drought was chosen as a top hazard of concern due to the ongoing drought affecting the area. Drought impacts can include farm equipment fires, farm field fires, and damaged crops. The local planning team indicated that both its wells are fairly new, and the city rotates wells weekly. Static and pumping levels are tested each week upon rotation of service.

Flooding

According to the NCEI, there were four flood events in Whittemore from 1996 to January 2023. These events resulted in \$280,000 in property damage, but no injuries or fatalities. The city has a project underway to clean and line all storm sewers. The city has replaced and lines all manholes. The local planning team indicated that larger county tile is needed near the Cenex station to handle the rush of water as it enters Whittemore on the west side of the community. Additionally, Fourth Street north of the railroad needs to be improved to mitigate the flooding of lawns and basements in the area.

As noted above, Whittemore does not participate in the NFIP due to the low flood risk to community structures and because of the minimal impacts from historical flooding. NFIP participation will be reevaluated if the community's flood risk changes. The initial Flood Insurance Rate Map (FIRM) for Whittemore was delineated on 3/20/2018, which is also the current effective map date. Whittemore does not currently have any repetitive loss or severe repetitive loss structures.

According to the Risk Factor website, Whittemore has a minor risk of flooding, with 10 properties and one mile of road having a greater than 26% chance of being severely affected by flooding over the next 30 years. That risk is unlikely to change in the next 30 years.²⁴⁴

Severe Thunderstorms (includes Hail & Lightning)

Severe thunderstorms are a regular part of the climate and weather in the Midwest. These storms can cause damage through heavy rain, lightning strikes, hail, and high winds. The NCEI reports 23 instances of severe thunderstorms that occurred in Whittemore from 1996 to January 2023. These storm events resulted in \$243,000 in property damage, with no injuries or deaths. A hailstorm in July 2012 was particularly damaging, according to the planning team. The city has updated its plan for staging of equipment and updated equipment itself to manage repairs associated with this hazard. The city also participates in "Alert Iowa" program and encourages citizens to sign up.

²⁴⁴ Risk Factor. "Flood Factor: Whittemore, Iowa". Accessed March 2024. https://riskfactor.com/city/whittemore-ia/1985260_fsid/flood.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for Bancroft. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. Some impacts noted by the local planning team include the need to provide shelter to stranded travelers from Highway 15 or 18. The city has updated snow removal equipment and installed a new snowplow to reduce its vulnerability and impacts from this hazard.

Tornado and Windstorm

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and no tornadoes in Whittemore. The city tests its tornado siren daily and has synced its siren to Algona's LEC for sounding in case of an emergency. The city would like to install a second siren to alert the people outdoors during such an event. Backup generators are also needed.

Mitigation Strategy

Completed Mitigation and Strategic Actions

Mitigation Action	Heating/Cooling Centers
Description	Build or designate dedicated heating and cooling centers/shelters
Hazard(s)	Extreme Temperatures
Status	Dedicated heating and cooling centers have been designated.

New Mitigation and Strategic Actions

Mitigation Action	Drought Awareness/Education
Description	Increase public awareness and education on drought, its impacts, and ways to conserve water as a community.
Hazard(s)	Drought
Estimated Cost	\$1,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Mayor
Status	Not started

Mitigation Action	Stormwater System and Drainage Improvements
Description	Upgrade/Repair Fourth Street (north of the railroad tracks) as its elevation is too high to allow heavy rainwater to cross the roadway, resulting in flooded basements.
Hazard(s)	Flooding, Infrastructure Failure, Transportation Incident
Estimated Cost	\$500,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor
Status	Project is on hold due to lack of funding and resources.

Continued Mitigation and Strategic Actions

Mitigation Action	Emergency Management Plans
Description	Develop/update/publicize emergency management plans, including preparedness, response recover, operations, long term recovery, and mitigation plans and maintain data inventory
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Mayor
Status	Project is on hold due to lack of funding and resources.

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education increase public awareness of natural and manmade hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$1,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	EMA, Local Public Safety
Status	Project is on hold due to lack of funding and resources.

Mitigation Action	Continuity of Operations Plan (COOP)
Description	Develop a Continuity of Operations Plan to use during a disaster that provides a means to continue operations, who is in charge, where to set up control and command, etc.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$5,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	Project is on hold due to lack of funding and resources.

Mitigation Action	Safe Rooms
Description	Construct or retrofit existing structures into public safe rooms at government facilities, recreational facilities, recreational areas, manufactured home parks, schools, childcare centers, and other critical facilities
Hazard(s)	Tornado and Windstorm, Severe Thunderstorms, Severe Winter Storms
Estimated Cost	\$250,000+
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	Project is on hold due to lack of funding and resources.

Mitigation Action	Backup Generators
Description	Provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other community lifelines.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	A backup generator was added at the water plant and sewer plant. Additional generators are needed at the community center and other community lifelines.

Mitigation Action	Enhance Security Measures
Description	Install and maintain security measures at all critical facilities.
Hazard(s)	Terrorism and Civil Unrest
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	Project is on hold due to lack of funding and resources.

Mitigation Action	Emergency Response Training
Description	Conduct training for emergency response personnel
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	TBD
Local Funding Source	City General Fund
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Mayor, EMA
Status	Project is on hold due to lack of funding and resources.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The planning team will include the Mayor/City Council, Fire and EMS, and Public Works Superintendent. The plan will be reviewed and updated bi-annually. The public will be involved in the review and revision process through social media, residential mailings, flyers, and council meetings.

Special Districts Appendix

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School District Profile

Algona Community Schools

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table ACS.1: Algona Schools Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Joe Carter	Superintendent	Algona School District	Recordings

Location and Services

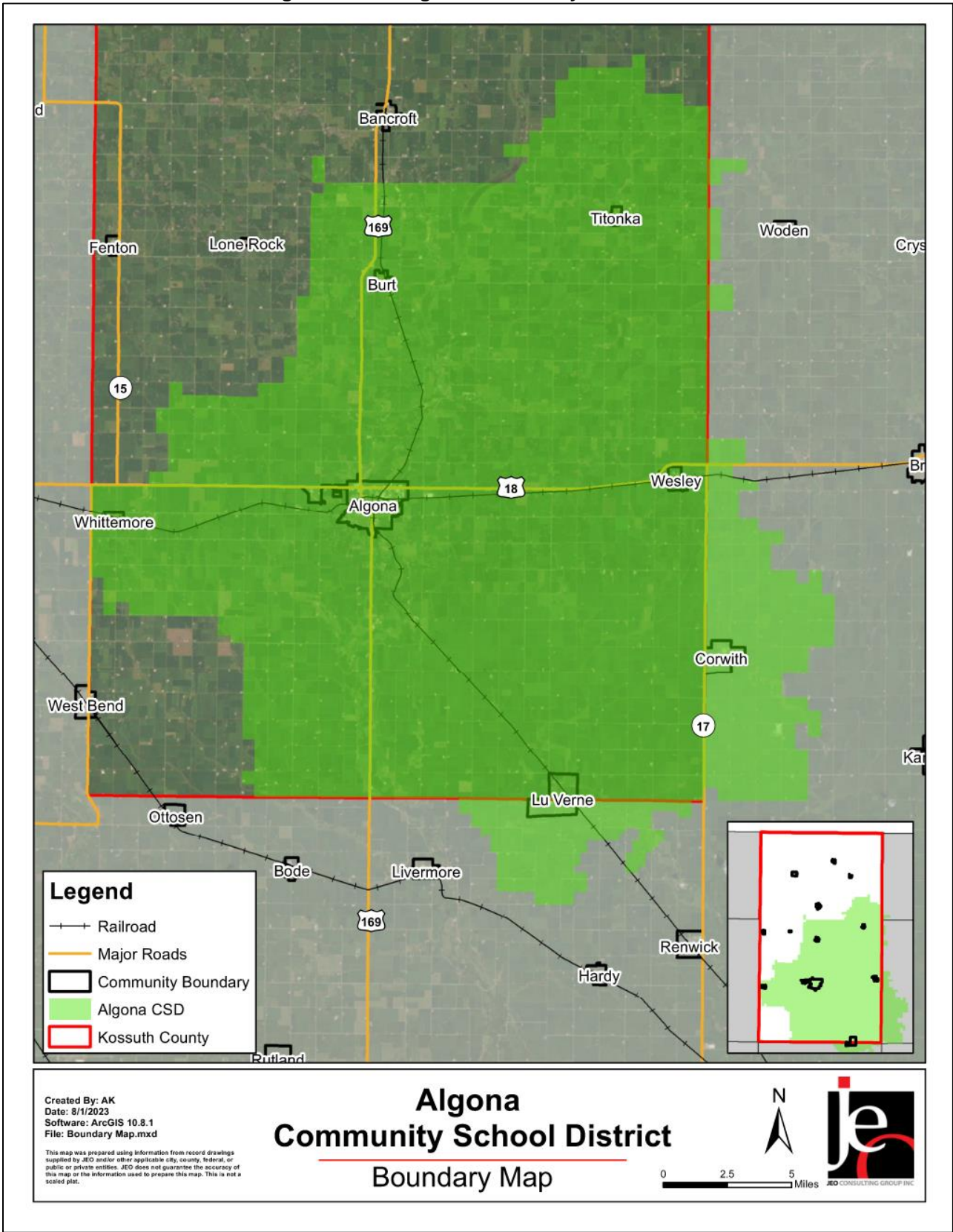
The Algona Community School District is located primarily in Kossuth County, with portions extending into Hancock, Humboldt, and Winnebago Counties. The district merged with Lu Verne Community School District in July 2023. The district serves students in the cities of Algona, Burt, Corwith, Lu Verne, Swea City, Titonka, Wesley, Whittemore and their surrounding areas. Algona Community Schools is comprised of five schools: Algona High School, Algona Middle School, Bertha Godfrey Elementary, Bryant Elementary, and Lucia Wallace Elementary. The district office is located in Algona. Some students from surrounding areas such as Bancroft, Titonka, Corwith, Wesley, Lu Verne, Whittemore, and Burt open-enroll into the school district. The planning team also indicated that besides English, Spanish is also spoken in the district.

Demographics

Figure ACS.2 displays the historical student population trend starting with the 2005-06 school year and ending with the 2022-2023 year. It indicates that the student population has slowly increased since 2006. There are 1,593 students enrolled in the district.¹ The district anticipates little change in enrollment over the next five years.

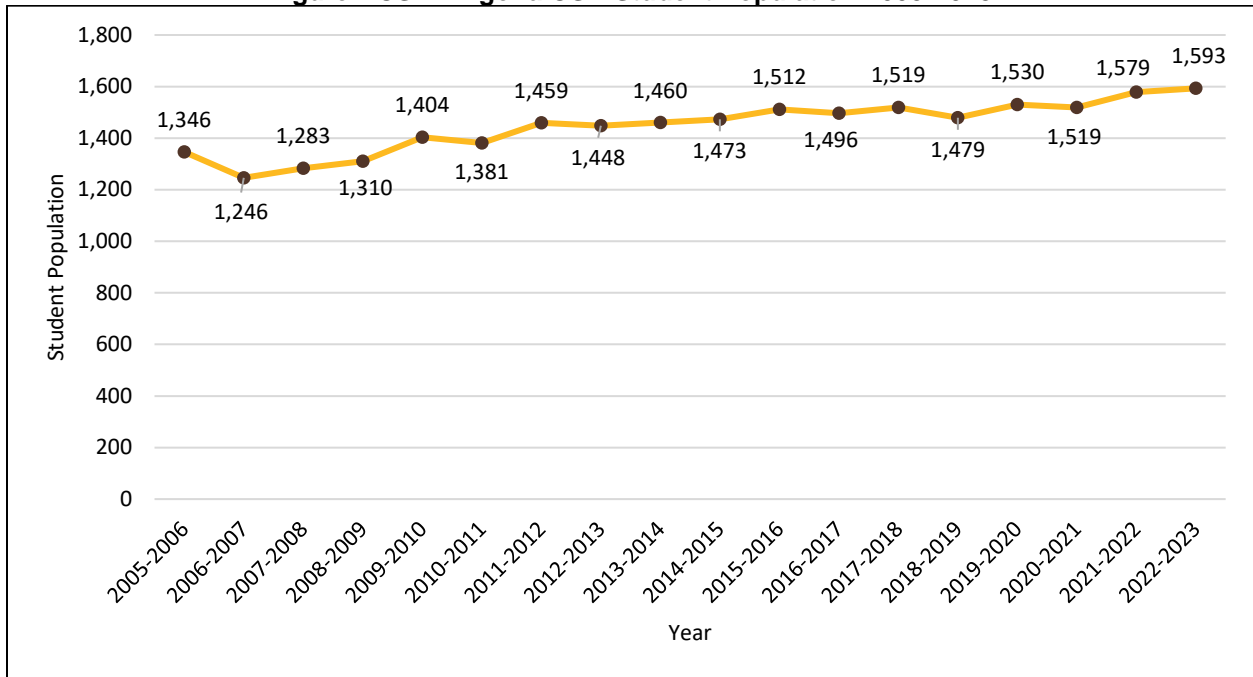
¹ Iowa Department of Education. "Iowa Public School District PreK-12 Enrollments by District, Grade, Race and Gender." Accessed May 2023. <https://educateiowa.gov/data-reporting/education-statistics-pk-12>.

Figure ACS.1: Algona Community Schools



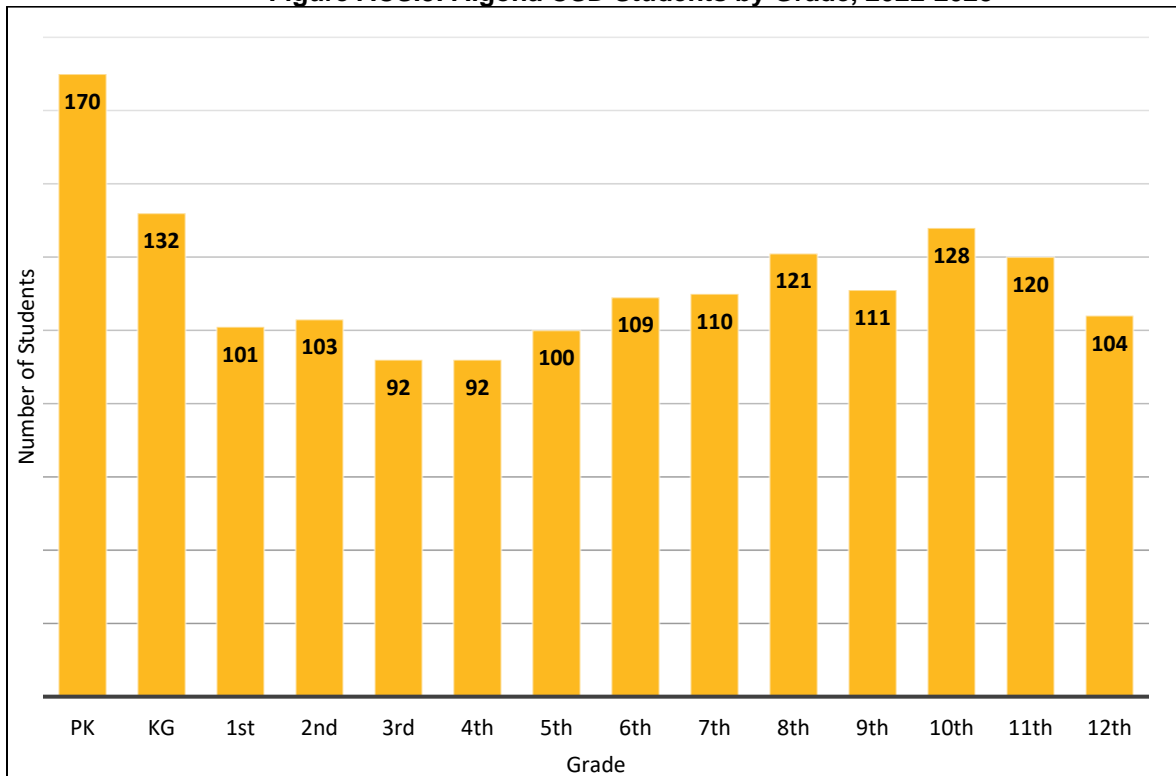
Section Seven: Algona School District Profile

Figure ACS.2: Algona CSD Student Population 2005-2023



Source: Iowa Department of Education

Figure ACS.3: Algona CSD Students by Grade, 2022-2023



Source: Iowa Department of Education

Figure ACS.3 indicates that the largest number of students are in Pre-Kindergarten, Kindergarten, and 10th grades. The lowest number of students are in 3rd, 4th, and 5th grades. According to the Iowa Department of Education, 36.2% of students receive either free or reduced priced meals at school. This is lower than the state average of 42.3%. Additionally, 16.4% of students are in the Special Education Program and 2.2% of students are English Language Learners. These particular students may be more vulnerable during a hazardous event than the rest of the student population.

Table ACS.2: K-12 Student Statistics, 2022-2023

	Algona CSD	State of Iowa
Free/Reduced Priced Meals	36.2%	42.3%
Special Education Students*	16.4%	13.2%
English Language Learners (ESL)	2.2%	6.9%

Source: Iowa Department of Education²

*Special education student enrollment data currently only available for 2021-2022.

Administration and Staff

Algona Community Schools has a superintendent, four principals, one assistant principal, and supportive staff. The school board is made up of a seven-member panel. Algona Community Schools also has a number of additional departments and staff that may be available to implement hazard mitigation initiatives, including the director of buildings and grounds. The district trains its staff on emergency procedures during professional development sessions before the school year begins. The district employs 250 staff members.

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the district's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

The district regularly conducts drills with students and staff. Parents and staff are notified about emergency events through email, the school app, social media, and text message. The district partners with local first responders to conduct training programs such as ALICE training.

Table ACS.3: Capability Assessment

Capability/Planning Mechanism		Yes/No
Planning Capability	Facility Improvements Plan	Yes
	Continuity of Operations Plan	No
	Crisis Response Plan	Yes
	Strategic Plan	Yes
	Other (if any)	
Administration & Technical Capability	Grant Manager	No
	Mutual Aid Agreement	No
	Other (if any)	

² Iowa Department of Education. "Student Demographic Information." Accessed May 2023. <https://educateiowa.gov/data-reporting/education-statistics-pk-12>

Section Seven: Algona School District Profile

Fiscal Capability	Applied for grants in the past	Yes
	Awarded grants in the past	Yes
	Authority to levy taxes for specific purposes such as mitigation projects	Yes
	General Obligation Revenue or Special Tax Bonds	Revenue Bond
	Approved bonds in the past	Yes
	Flood Insurance	No
	Other (if any)	
Education & Outreach Capability	Local school groups or non-profit organizations focused on environmental protection, emergency preparedness, access, and functional needs populations, etc. (Ex. Parent groups, Crisis Response Teams, etc.)	Yes (SIAC)
	Hazard education or information program	No
	StormReady Certification	No
	Other (if any)	
Drills	Fire	2 / year
	Tornado	2 / year
	Intruder	1 / year
	Bus evacuation	1 / year
	Evacuation	1 / year
	Other (if any)	

Table ACS.4: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources needed to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Limited
Time to devote to hazard mitigation	Limited
Ability to expand and improve identified capabilities to achieve mitigation	Limited

Grants and Funding

The local planning team indicated that district funds are sufficient to pursue new capital projects. A large portion is currently dedicated to the new fieldhouse project. District funds have remained about the same in recent years. The district has not applied for any grants in the last five years.

Plan Integration

Algona Community School District has one planning document that discusses or relates to hazard mitigation. The plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the district updates its planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the update.

Crisis Response Plan

The school district uses a Crisis Response Plan to react to hazardous events. The Crisis Response Plan discusses natural hazards, addresses shelter in place protocols, identifies scenarios requiring evacuation and critical evacuation routes, and identifies sheltering locations. There is currently no timeline to update the plan.

Future Development Trends

A new fieldhouse will be built starting in 2024. No other buildings or developments are currently planned. The district’s overall vulnerability has not been affected by changes in development; however, a new fieldhouse could reduce vulnerability by providing a mass shelter location in the event of a disaster.

Community Lifelines

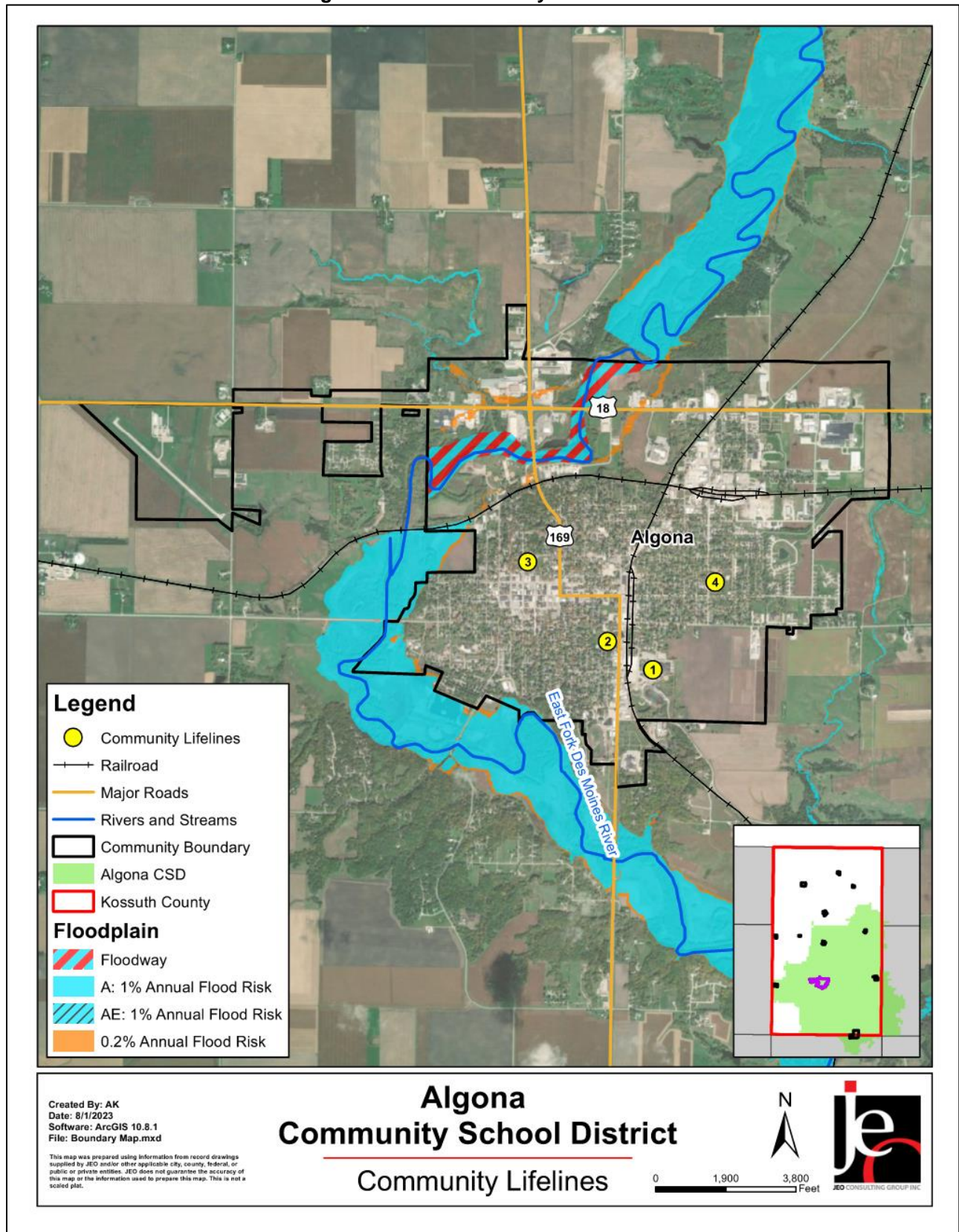
Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction’s functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communications; Transportation; and Hazardous Material facilities.



Table ACS.5: Community Lifelines

CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	Algona Middle/High School	Other	S	N
2	Lucia Wallace Elementary	Other	S	N
3	Bryant Elementary	Other	S	N
4	Bertha Godfrey Elementary	Other	S	N

Figure ACS.6: Community Lifelines

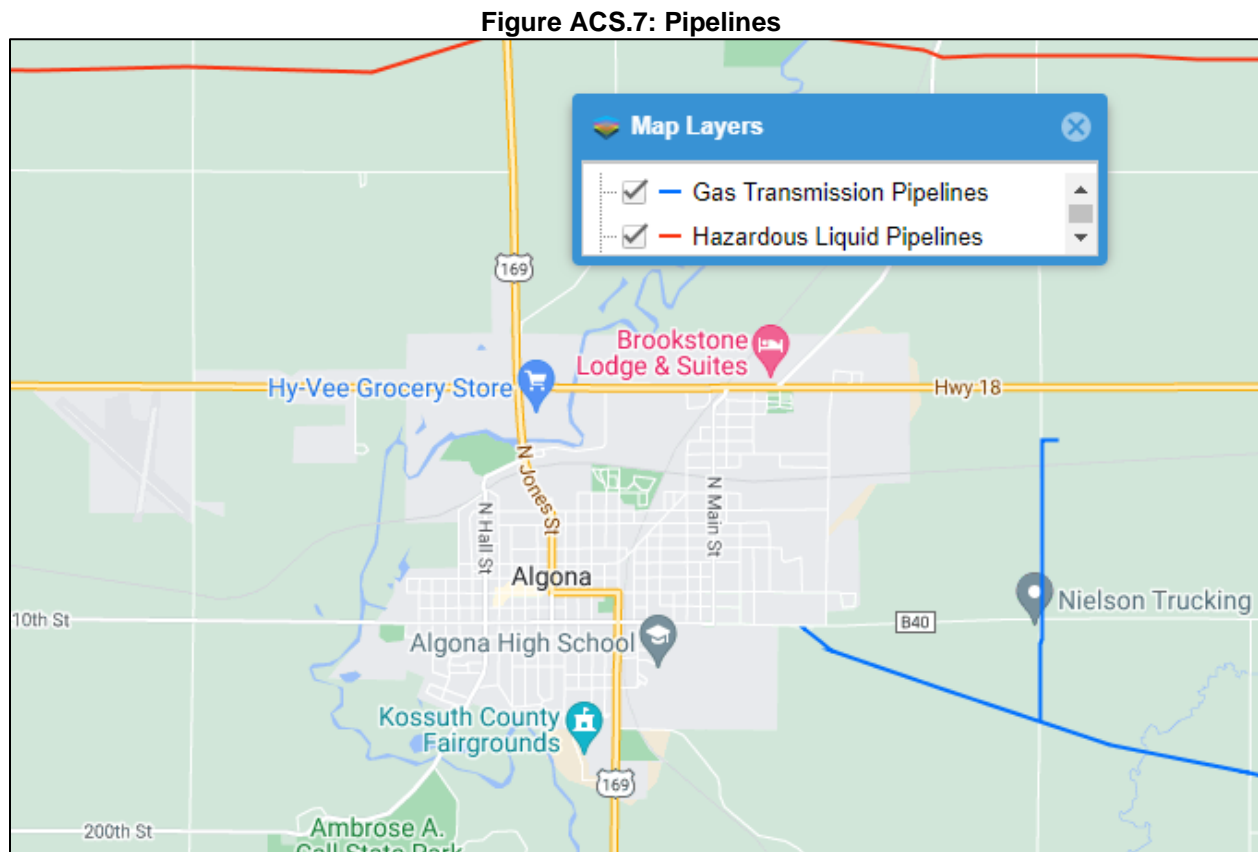


Transportation

The most traveled routes in the district include Highway 169 and Highway 18. The planning team indicated that all routes are used to pick up students. No transportation accidents have impacted schools within the district in recent memory. There are 24 buses in the district which transport 600 students to and from school.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. There are multiple pipelines that travel near Algona Community Schools. These can be seen in Figure ACS.7.



Source: National Pipeline Mapping System³

³ National Pipeline Mapping System. 2022. "Public Viewer." Accessed April 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

Section Seven: Algona School District Profile

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are 21 chemical storage sites within or near Algona that contain hazardous materials (listed below). The local planning team reported that no chemical releases have impacted the district.

Table ACS.6: Chemical Storage Lifelines

Facility Name	Address
Ag Processing Inc.-Algona	2108 140th Avenue, Algona
Algona Bulk Plant	2224 Hwy 169, Algona
Algona Classic Stop	703 S Phillips St, Algona
Algona Municipal Utilities Comm Bldg	12 E North Street, Algona
Algona Municipal Utilities East Substation	820 North Finn Drive, Algona
Algona Municipal Utilities Power Plant	521 N Hall Street, Algona
Algona Municipal Utilities Water Treatment Plant	201 N Hall Street, Algona
Algona Municipal Utilities West Substation	601 N Williams Street, Algona
CCM Algona Plant	412 Hwy 18, Algona
CenturyLink - Algona CO	21 E Call Street, Algona
Farmers Coop Elevator	833 S Phillips Street, Algona
Flint Hills Resources Pine Bend, LLC - Algona Facility	832 N Main Street, Algona
Iowa DOT Algona Maintenance Garage	2107 100th Avenue, Algona
ITC Midwest Kossuth	1502 US-18, Algona
K.C. Nielsen Ltd Algona	2613 US-18, Algona
Mathy Construction Co #23	Highway 169 & 170th Street
New Cooperative, Inc., Algona	2106 140th Avenue, Algona
Pioneer Hibred Int Inc	1901 Hwy 169, Algona
Precision Pulley and Idler - Stainless	1615 E Poplar St, Algona
Smithfield Hog Production - Feed Mill	2120 90th Avenue, Algona
Snap-on Tools Manufacturing Company	2600 U.S. Highway 18, Algona

Source: E-Plan⁴

⁴ E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the district's capabilities.

Severe Winter Storms

Severe winter storms are a regular part of the climate and weather for the school district. Severe winter storms include blizzards, ice accumulation, heavy snow, and winter storms. These storms can cause power outages during bitterly cold temperatures, road closures, and economic impacts. According to the NCEI, there were 109 winter storm events in Kossuth County from 1996 to January 2023. The local planning team indicated that some buildings could use backup generators to mitigate power outages.

Mitigation Strategy

Continued Mitigation and Strategic Actions

Mitigation Action	Backup Generators
Description	Purchase/install backup power generators for use in school buildings. The schools are used as evacuation centers and possible Emergency Operations Centers. Installing backup generators in the schools will ensure they can continue to operate as critical facilities during emergencies.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000+
Local Funding Source	Algona School District
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Algona School District
Status	Not started

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education, increase student and staff awareness of natural and manmade hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	Algona School District
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	Algona School District
Status	In progress

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside planning documents (e.g., annual budgets, etc.), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The local planning team will include the Superintendent, Director of Buildings & Grounds, and Administrative Team. The plan will be reviewed bi-annually. The district will involve students, staff, and parents in the plan review and revision process through website updates.

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School District Profile

North Kossuth Community Schools

**Kossuth County
Hazard Mitigation Plan 2024**

Local Planning Team

Table NKS.1: North Kossuth Schools Local Planning Team

Name	Title	Jurisdiction	Meeting Attendance
Julie Runksmeier	Principal	North Kossuth CSD	1-on-1 Meeting

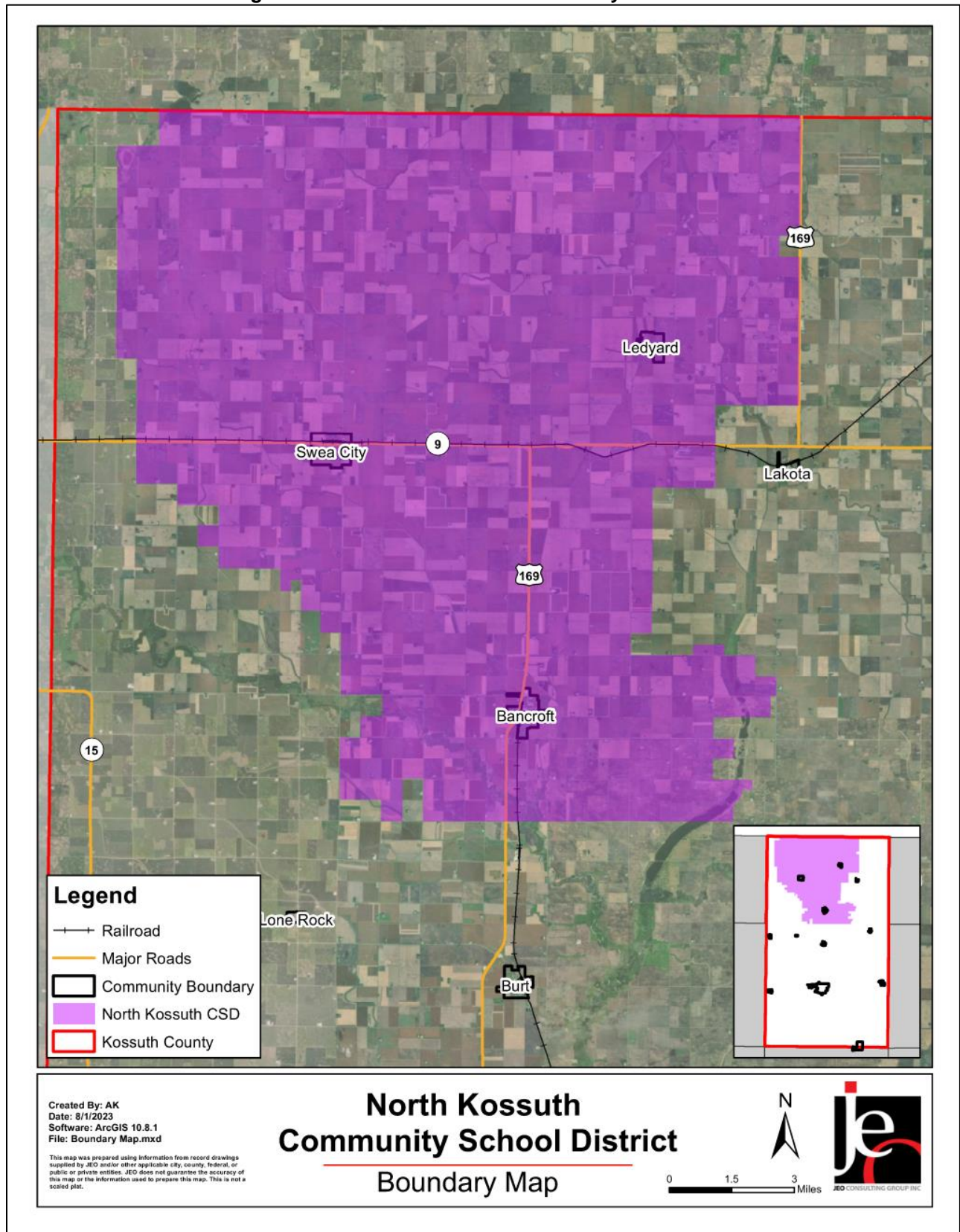
Location and Services

The North Kossuth Community School District is located in northern Kossuth County and serves the cities of Bancroft, Ledyard, Swea City, and their surrounding areas. The school district has a whole grade sharing agreement with North Union Schools in which the middle school and high school are shared between them. North Kossuth Schools is comprised of North Kossuth Elementary School and North Union Middle School – both located in Swea City. North Union High School is located in Armstrong. The North Kossuth district office is located in Swea City. Both English and Spanish are spoken within the district. According to the local planning team, some students opt in from surrounding communities, such as Lakota and North Union.

Demographics

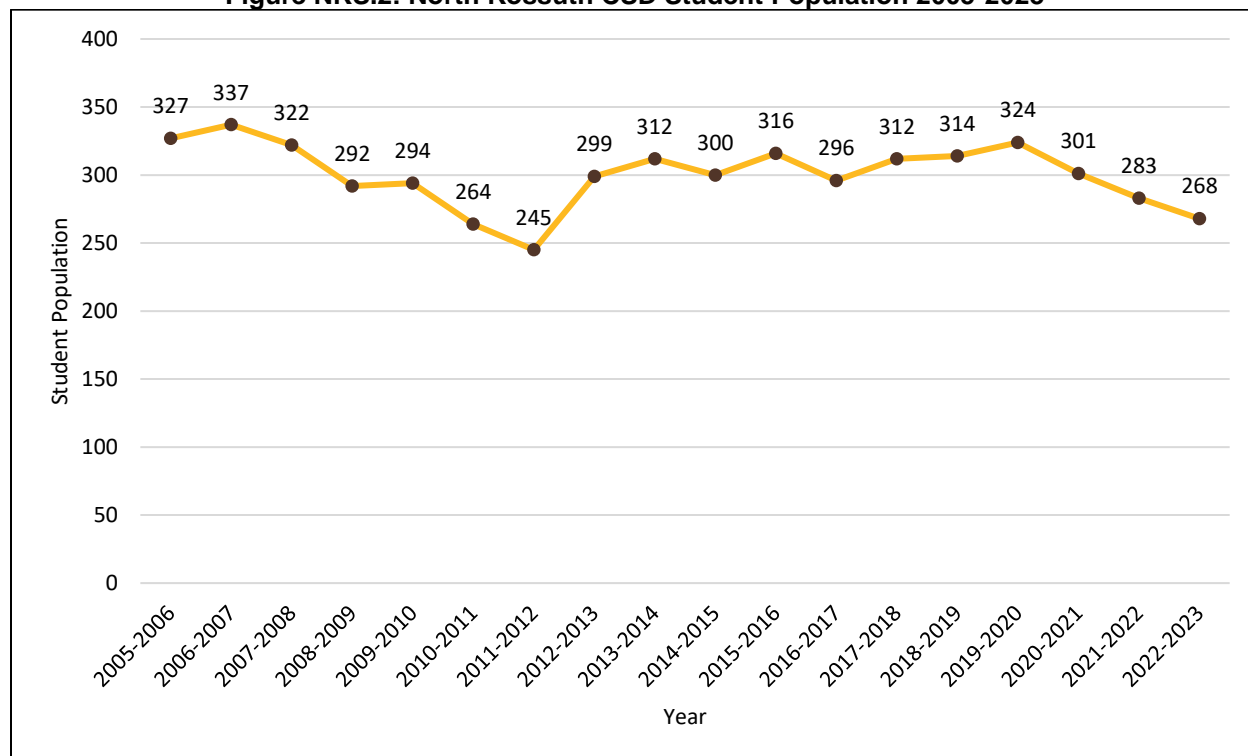
Figure NKS.2 displays the historical student population trend starting with the 2005-06 school year and ending with the 2022-2023 year. It indicates that the student population has fluctuated during that time and has decreased since 2019. There are 285 students enrolled in the district according to the local planning team. Little change is expected over the next five years.

Figure NKS.1: North Kossuth Community Schools



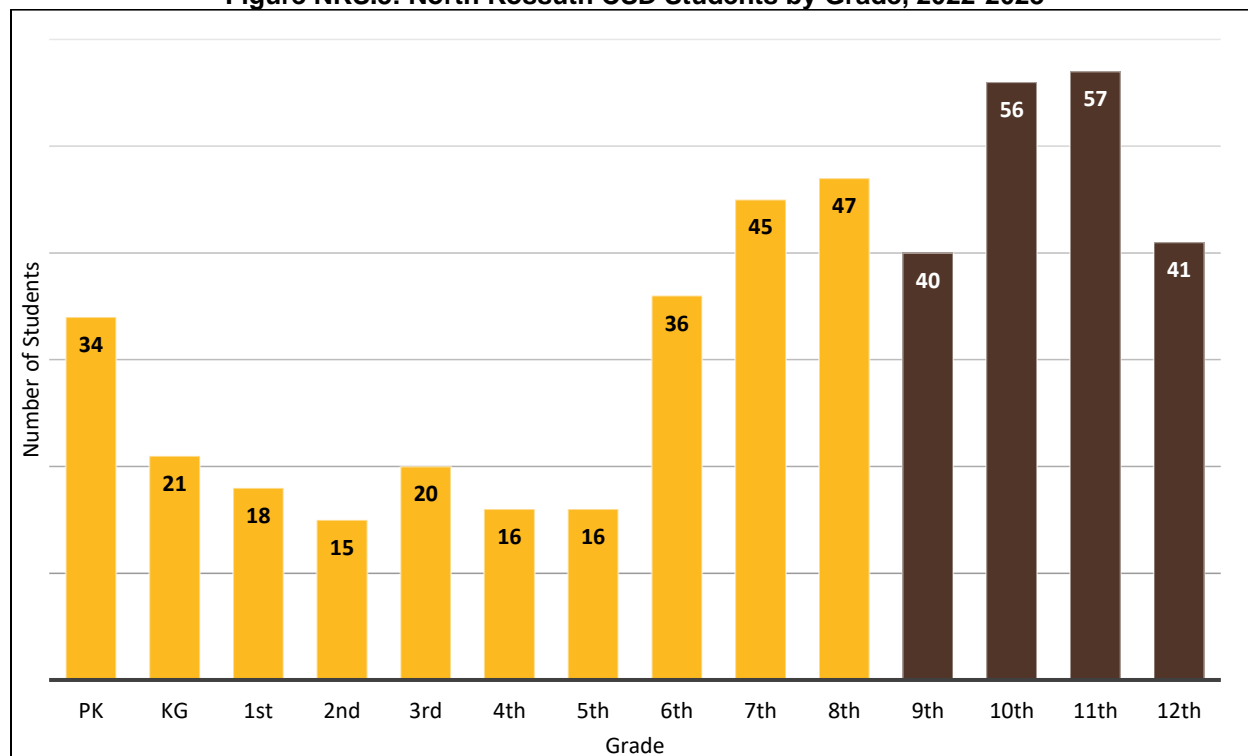
Section Seven: North Kossuth School District Profile

Figure NKS.2: North Kossuth CSD Student Population 2005-2023



Source: Iowa Department of Education

Figure NKS.3: North Kossuth CSD Students by Grade, 2022-2023



Source: Iowa Department of Education

*Grades 9-12 students attend North Union High School as part of a grade sharing agreement between the districts.

Figure NKS.3 indicates that the largest number of students are in 8th, 10th, and 11th grades. The lowest number of students are in 2nd, 4th, and 5th grades. According to the Iowa Department of Education, 55.6% of students receive either free or reduced priced meals at school. This is higher than the state average of 42.3%. Additionally, 17.7% of students are in the Special Education Program and 0.4% of students are English Language Learners. These particular students may be more vulnerable during a hazardous event than the rest of the student population.

Table NKS.2: K-12 Student Statistics, 2022-2023

	North Kossuth CSD	State of Iowa
Free/Reduced Priced Meals	55.6%	42.3%
Special Education Students*	17.7%	13.2%
English Language Learners (ESL)	0.4%	6.9%

Source: Iowa Department of Education⁵

*Special education student enrollment data currently only available for 2021-2022.

Administration and Staff

North Kossuth Community Schools has a superintendent, one principal, and supportive staff. The school board is made up of a seven-member panel. North Kossuth Community Schools also has a number of additional departments and staff that may be available to implement hazard mitigation initiatives, such as the School Board, and the School Improvement Advisory Committee. The district trains its staff in its emergency procedures through fire drills, tornado drills, intruder drills, stop the bleed training, and evacuation drills. The district employs about fifty staff.

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the district's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

The district educates students and families about emergency procedures through drills, emails to families regarding drills, and by providing opportunities for families to meet with law enforcement to learn and ask questions about the various drills.

Table NKS.3: Capability Assessment

Capability/Planning Mechanism		Yes/No
Planning Capability	Facility Improvements Plan	Y
	Continuity of Operations Plan	Y
	Crisis Response Plan	Y
	Strategic Plan	Y
	Other (if any)	
Administration & Technical Capability	Grant Manager	Y
	Mutual Aid Agreement	N
	Other (if any)	
Fiscal	Applied for grants in the past	Y

⁵ Iowa Department of Education. "Student Demographic Information." Accessed May 2023. <https://educateiowa.gov/data-reporting/education-statistics-pk-12>

Capability	Awarded grants in the past	N
	Authority to levy taxes for specific purposes such as mitigation projects	Y
	General Obligation Revenue or Special Tax Bonds	Y
	Approved bonds in the past	Y
	Flood Insurance	N
	Other (if any)	
Education & Outreach Capability	Local school groups or non-profit organizations focused on environmental protection, emergency preparedness, access, and functional needs populations, etc. (Ex. Parent groups, Crisis Response Teams, etc.)	Y
	Hazard education or information program	Y
	StormReady Certification	N
	Other (if any)	
Drills	Fire	4 / year
	Tornado	4 / year
	Intruder	2 / year
	Bus evacuation	1 / year
	Evacuation	1 / year
	Other (if any)	

Table NKS.4: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources needed to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Limited
Time to devote to hazard mitigation	Limited
Ability to expand and improve identified capabilities to achieve mitigation	Limited

Grants and Funding

The local planning team indicated that district funds are limited to maintaining current facilities and systems. District funds have remained about the same in recent years. The district has not applied for any grants in the last five years.

Plan Integration

North Kossuth Community School District has one planning document that discusses or relates to hazard mitigation. The plan is listed below along with a short description of how it is integrated with the hazard mitigation plan or how it contains hazard mitigation principles. When the district updates its planning mechanisms, the local planning team will review the hazard mitigation plan for opportunities to incorporate the goals and objectives, risk and vulnerability data, and mitigation actions into the update.

Crisis Response Plan

The school district uses a Crisis Response Plan to react to hazardous events. The Crisis Response Plan discusses natural hazards, addresses shelter in place protocols, identifies scenarios requiring evacuation and critical evacuation routes, identifies sheltering locations, opportunities for mitigation following an event, and any gaps related to hazards. The administration looks through the plan yearly to see if any updates need to be made.

Future Development Trends

No large projects have occurred in recent years, other than adding new carpet. There are currently no plans for new construction or renovation. The district's overall vulnerability has not been affected by changes in development.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communication; Transportation; and Hazardous Material facilities.

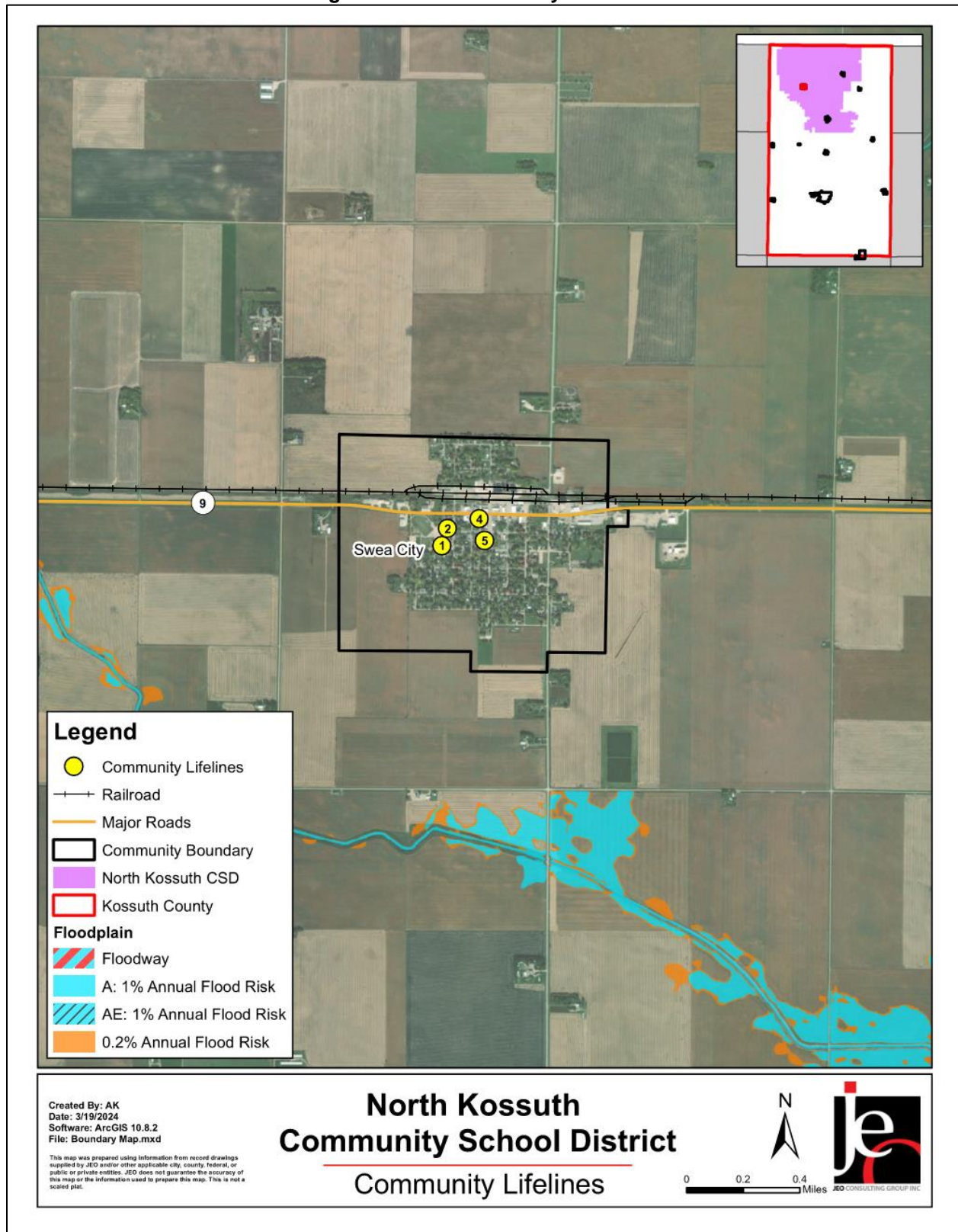


Table NKS.5: Community Lifelines

CL#	Name	Lifeline Type	Generator (G) Shelter (S)	Floodplain (Y/N)
1	North Kossuth Elementary	Other	S	N
2	North Union Middle School	Other	S	N
3*	North Union High School	Other	S	N
4	Swea City Fire Dept	Safety and Security	S, G	N
5	Main Street Manor	Other	S	N
6*	Kossuth County EMS	Safety and Security	-	N

*Community Lifeline located outside of map viewing area

Figure NKS.6: Community Lifelines



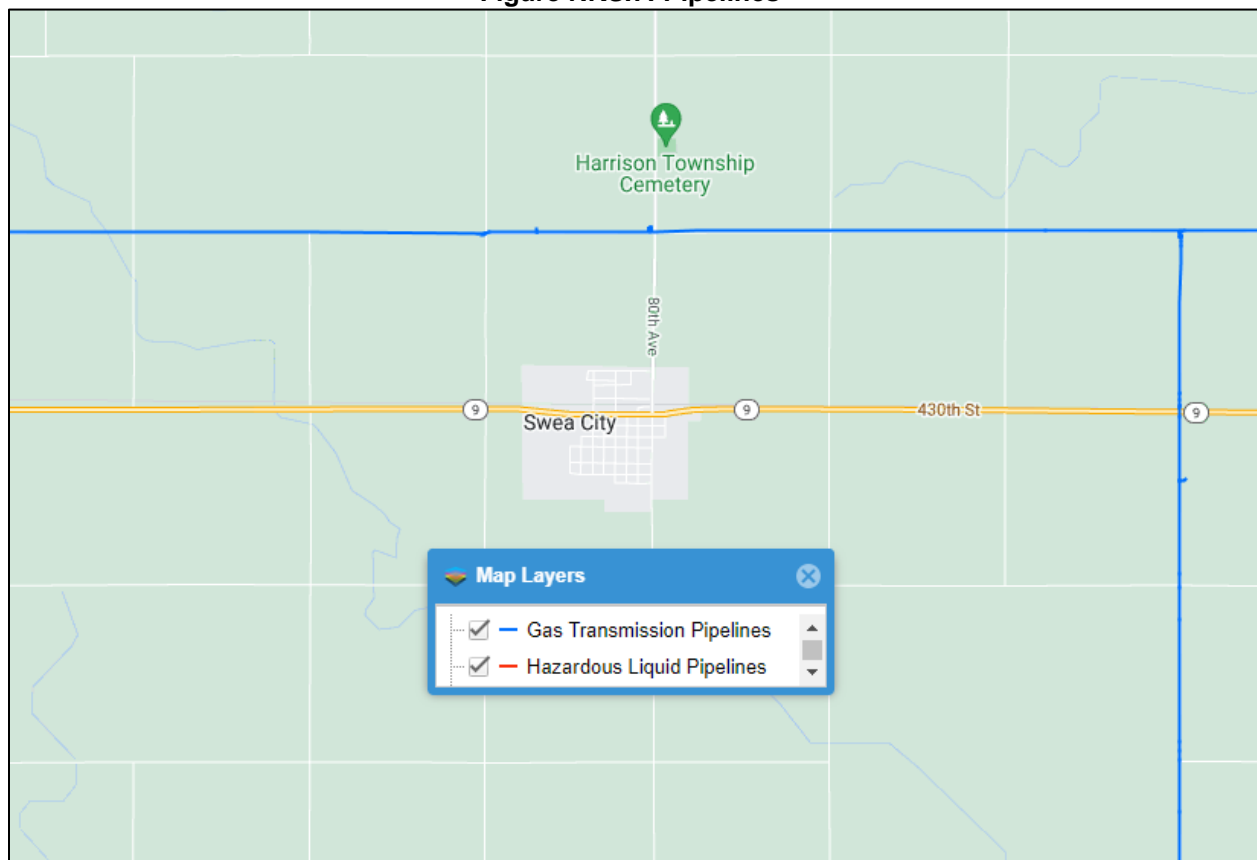
Transportation

The most traveled routes in the district include Highway 9 and Highway 169. No transportation accidents have impacted schools within the district in recent memory. There are five buses in the district which transport 150 students to and from school.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. There are multiple pipelines that travel near North Kossuth Community Schools in Swea City. These can be seen in Figure NKS.7. No hazardous material pipelines travel near the school in Armstrong.

Figure NKS.7: Pipelines



Source: National Pipeline Mapping System⁶

⁶ National Pipeline Mapping System. 2022. "Public Viewer." Accessed April 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

Section Seven: North Kossuth School District Profile

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are 11 chemical storage sites within or near Armstrong and Swea City that contain hazardous materials (listed below). The local planning team reported that no chemical releases have impacted the district.

Table NKS.6: Chemical Storage Lifelines

Facility Name	Address
Arts Way Mfg Co Inc	5556 Hwy 9 Highway, Armstrong
CCM Armstrong Plant	1808 Highway 15, Armstrong
Ferrellgas	Hwy 15 South Street, Armstrong
Growmark FS-Midwest - Armstrong LP	2032 Hwy15, Armstrong
Moveero - Armstrong	5453 6th Ave, Armstrong
StateLine Cooperative - Armstrong Fertilizer Facility	5670 E 9 Highway, Armstrong
StateLine Cooperative - Halfa Facility	5265 206th Street, Armstrong
StateLine Cooperative - Maple Hill Facility	1746 500th Avenue, Armstrong
Windstream Iowa Telecom - Armstrong Central Office	403 6th Street, Armstrong
BrandFX LLC	105 4th Avenue, Swea City
Iowa DOT Swea City Maintenance Garage	806 Highway 9, Swea City

Source: E-Plan⁷

⁷ E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022.
<https://erplan.net/eplan/actions/facilitySearch.htm>.

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the district's capabilities.

Drought

Drought is a concern due to the ongoing drought in the area and the impacts it can have on families and the local economy.

Infrastructure Failure

The local planning team identified this as a top hazard due to the severe impact a failure could create for the school. The school district continues to assess and update systems if the school budget allows.

Severe Thunderstorms (includes Hail & Lightning)

Severe thunderstorms are a regular part of the climate and weather in the Midwest. These storms can cause damage through heavy rain, lightning strikes, hail, and high winds. The NCEI reports 39 instances of severe thunderstorms that occurred in Swea City from 1996 to January 2023. These storm events resulted in \$288,000 in property damage, with no injuries or deaths.

Tornado and Windstorm

Tornadoes and Windstorms have the potential for significant damage, economic impacts, and loss of life. Windstorms are common across the county and can cause property and tree damage and brief power outages. Tornadoes are much less common, but the impacts can be far greater. Between 1996 and January 2023, the NCEI recorded 47 high wind events in Kossuth County and no tornadoes in Swea City.

Transportation Incident

Transportation Incident was identified as a top concern due to the general risk of school buses traveling on the roads and highways, especially if students are on board.

Mitigation Strategy

New Mitigation and Strategic Actions

Mitigation Action	New Boiler
Description	Purchase and install a new boiler.
Hazard(s)	Extreme Temperatures, Infrastructure Failure, Severe Winter Storms
Estimated Cost	\$100,000+
Local Funding Source	North Kossuth School District
Timeline	5+ years
Priority	High
Lead Agency/Department	North Kossuth School District
Status	Project is on hold due to lack of funding and resources.

Mitigation Action	Drought Awareness/Education
Description	Increase public awareness and education on drought, its impacts, and ways to conserve water as a community school district.
Hazard(s)	Drought
Estimated Cost	\$1,000+
Local Funding Source	North Kossuth School District
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	North Kossuth School District
Status	Not started

Mitigation Action	Provide Additional Training to Bus Drivers
Description	Provide additional training to bus drivers to reduce the risk of school bus accidents.
Hazard(s)	Transportation Incident
Estimated Cost	\$3,000+
Local Funding Source	North Kossuth School District
Timeline	2-5 years
Priority	Medium
Lead Agency/Department	North Kossuth School District
Status	Not started

Continued Mitigation and Strategic Actions

Mitigation Action	Backup Generators
Description	Purchase/install backup power generators for use in school buildings. The schools are used as evacuation centers and possible Emergency Operations Centers. Installing backup generators in the schools will ensure they can continue to operate as critical facilities during emergencies.
Hazard(s)	Dam Failure, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$100,000+
Local Funding Source	North Kossuth School District
Timeline	5+ years
Priority	Medium
Lead Agency/Department	North Kossuth School District
Status	Project is on hold due to lack of funding and resources.

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps, and environmental education, increase student and staff awareness of natural and manmade hazards.
Hazard(s)	Animal & Plant Disease, Dam Failure, Drought, Earthquakes, Extreme Temperatures, Flooding, Grass/Wildfire, Hazardous Materials Release, Human Infectious Diseases, Infrastructure Failure, Severe Thunderstorms, Severe Winter Storms, Terrorism & Civil Unrest, Tornado & Windstorm, Transportation Incident
Estimated Cost	\$1,000+
Local Funding Source	North Kossuth School District
Timeline	5+ years
Priority	Medium
Lead Agency/Department	North Kossuth School District
Status	In progress, however, limitation of resources is an issue.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside planning documents (e.g., annual budgets, etc.), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin.

The local planning team is responsible for reviewing and updating this profile as changes occur or after a major event. The local planning team will include the Superintendent, Principal, and Maintenance Director. The plan will be reviewed annually. The district will involve students, staff, and parents in the plan review and revision process through email, board meetings, and social media.

APPENDIX A

DOCUMENTS OF PUBLIC INVOLVEMENT

Contents:

1. Adoption Resolution Template
2. Invitation Letters
3. Project Website
4. Sign-In Sheets

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Adoption Resolution Template

RESOLUTION NUMBER _____

WHEREAS, the Federal Disaster Mitigation Act of 2000 was signed into law on October 30, 2000, placing new emphasis on state and local mitigation planning for natural hazards and requiring communities to adopt a hazard mitigation action plan to be eligible for pre-disaster and post-disaster federal funding for mitigation purposes; and

WHEREAS, a Hazard Mitigation Plan was prepared by the Kossuth County Emergency Management Agency, with assistance from JEO Consulting Group, Inc. of Lincoln, NE.

WHEREAS, the purpose of the mitigation plan was to lessen the effects of disasters by increasing the disaster resistance of the region and participating jurisdictions located within the planning boundary by identifying the hazards that affect _____ and prioritize mitigation strategies to reduce potential loss of life and property damage from those hazards, and

WHEREAS, FEMA regulations require documentation that the plan has been formally adopted by the governing body of _____ in the form of a resolution and further requesting approval of the plan at the Federal Level; and

NOW, THEREFORE, the governing body of _____ does herewith adopt the Kossuth County Hazard Mitigation Plan Update in its entirety; and

PASSED AND APPROVED this _____ day of _____, 2024.

President

ATTEST:

Clerk

Planning Team Kick-off Meeting Invitation Letter



April 17, 2023

RE: Kick-off Meeting Invitation for the Kossuth County 2024 Hazard Mitigation Plan Update

Dear Hazard Mitigation Planning Team Member,

The Kossuth County Emergency Management Agency is beginning the process to update the county-wide Hazard Mitigation Plan (HMP) with the assistance of JEO Consulting Group. HMPs identify vulnerabilities and possible impacts and losses within participating jurisdictions to various natural and man-made hazards (e.g., flood, drought, winter storm, dam failure, hazardous materials release, etc.). The HMP also identifies projects and strategies aimed at enhancing resilience and preparedness for specific hazards.

As a designated community representative for the hazard mitigation plan, you are invited to attend the HMP Kick-off Meeting. This meeting is expected to last approximately one and a half hours, and pizza will be provided. Meeting details are below:

HMP Kick-off Meeting
Tuesday, May 2, 2023, at 6:00pm
Kossuth County Emergency Response & Training Complex
219 S. Phillips St
Algona, IA 50511

The intent and goal of this meeting is to meet with JEO Consulting Group and other Planning Team members to discuss the scope of the project, roles and responsibilities of the plan, project goals and objectives, general project schedule, and preliminary data for plan development.

Please RSVP to me at (402) 392-9915 or at rappleford@jeo.com by Monday, May 1st. RSVPs are needed for an accurate count for food. If you have any dietary restrictions, please let me know. For additional information, please contact Charissa Mueller, Kossuth County Emergency Management Coordinator, at (515) 295-5904 or at cmueller@kossuthcounty.iowa.gov. We are looking forward to seeing you at the Kick-off Meeting!

Sincerely,

Becky Appleford
JEO Project Manager

cc: Charissa Mueller, Kossuth County Emergency Management Coordinator

JEO CONSULTING GROUP, INC.
JEO ARCHITECTURE, INC.

p: 712.792.9711 | 724 Simon Avenue | jeo.com
f: 712.792.9889 | Carroll, Iowa 51401

Round 1 Meeting Invitation Letter



July 19, 2023

RE: Kossuth County 2024 Hazard Mitigation Plan Update

Dear Hazard Mitigation Planning Participant,

Kossuth County Emergency Management Agency is in the process of updating their county-wide 2019 Hazard Mitigation Plan (HMP) with the assistance of JEO Consulting Group. HMPs identify vulnerabilities and possible impacts and losses across the county to various natural and man-made hazards (e.g., flooding, wildfire, winter storms, hazardous materials release, etc.). The plan then identifies projects and strategies aimed at enhancing community resilience and preparedness for specific hazards. Participating jurisdictions also become eligible for specific federal grant funding by engaging in the planning process.

You are receiving this letter because your jurisdiction is eligible and encouraged to participate in this planning effort. All taxing authorities including the county, cities, and school districts, are eligible to participate as jurisdictions. Other entities such as health care facilities, chamber of commerce, utility providers, businesses, or non-profits can also provide critical input as stakeholders.

To be recognized as a participating jurisdiction, FEMA requires at least one designated representative from your jurisdiction to participate in the planning process. Please attend the upcoming Round 1 meeting detailed below to meet this requirement. You may join either in person or online and the meeting should last approximately one hour with open discussion and work time available after with JEO planning staff.

HMP Round 1 Meeting

- Wednesday, August 9, 2023, at 6:00pm – Kossuth County Emergency Response & Training Complex – 219 S. Phillips St, Algona, IA 50511
- Or join online at <https://us02web.zoom.us/j/85788692909> or call (312) 626-6799, meeting ID 857 8869 2909.

Please RSVP to me by responding to the calendar invite, email me directly at rappleford@jeo.com or you may call me at (217) 741-0117. For more information on this planning effort, you can visit the project website at <https://www.jeo.com/KossuthCountyHMP> or please feel free to contact me. We look forward to seeing you at the meeting!

Sincerely,

Becky Appleford
JEO Project Manager

cc: Charissa Mueller, Kossuth County Emergency Management Coordinator

JEO CONSULTING GROUP, INC.
JEO ARCHITECTURE, INC.


p: 712.792.9711 | 724 Simon Avenue | jeo.com
f: 712.792.9889 | Carroll, Iowa 51401

*Potential participants and stakeholders were sent a meeting invitation. County Emergency Management reached out individually to neighboring jurisdictions.












Kossuth County Hazard Mitigation Plan | 2024

Stakeholders Round 2 Meeting Invitation Letter

Kossuth County Hazard Mitigation Plan - Final Meeting Invite



Anthony Kohel

To:  Anthony Kohel
Cc:  Charissa Mueller,  Becky Appleford
Bcc:  info@algona.org;  algonaaero@gmail.com;  bancroftchamber@gmail.com;  kccb@kossuthccb.com;  xkossuth@iastate.edu;  todd.schwartz@tsbbank.com;  palbers@kossuthcounty.iowa.gov;  jack.stinogel@iowa.gov

↩ Reply

↩ Reply All

→ Forward

⋮

Mon 12/18/2023 1:04 PM

Good afternoon,

The Kossuth County Emergency Management Agency is moving forward with the second phase of updating the Hazard Mitigation Plan (HMP). HMPs identify vulnerabilities, possible impacts or losses, and strategies to address various natural and man-made hazard events such as flood, drought, severe storms, or dam failure. The intent of this second meeting is to identify new mitigation actions to address local vulnerabilities, discuss community capabilities and existing planning mechanisms, and to review information collected to this point. You are receiving this letter because you are a potential stakeholder for this planning effort.


As a stakeholder, you are encouraged to provide input to the planning process to ensure identified mitigation efforts are appropriate and consistent with the special needs of the organization you represent. Your input will be integrated into the larger community profile prepared by your community's local representatives.

The final planning meeting will be held:

- Wednesday, January 10, 2024, at 6:00pm - Kossuth County Emergency Response & Training Complex – 219 S. Phillips St, Algona, IA 50511
- OR join online at <https://us02web.zoom.us/j/81187786153> or call (312) 626-6799, meeting ID 811 8778 6153

Please RSVP to the meeting by contacting Becky Appleford at bappleford@jeo.com or (217) 741-0117. For more information on this planning effort, you can visit the project website at <https://www.jeo.com/KossuthCountyHMP> or please feel free to contact me.

Sincerely,




Becky Appleford
JEO Project Manager

Kossuth County Hazard Mitigation Plan | 2024


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

Neighboring Jurisdictions Round 2 Meeting Invitation Letter




Kossuth County Hazard Mitigation Plan - Final Meeting Invite



Anthony Kohel

To:  Anthony Kohel

Cc:  Charissa Mueller,  Becky Appleford

Bcc:  tsherdan@emmetcounty.iowa.gov,  buffintona@hancocklaw-ia.com,  kayla.hagen@palaltosheriff.com

Reply

Reply All

Forward

...

Mon 12/18/2023 1:09 PM

Good afternoon,

The Kossuth County Emergency Management Agency is moving forward with the second phase of updating the Hazard Mitigation Plan (HMP). HMPs identify vulnerabilities, possible impacts or losses, and strategies to address various natural and man-made hazard events such as flood, drought, severe storms, or dam failure. The intent of this second meeting is to identify new mitigation actions to address local vulnerabilities, discuss community capabilities and existing planning mechanisms, and to review information collected to this point. You are receiving this letter because you represent a neighboring jurisdiction of Kossuth County.


Neighboring jurisdictions are encouraged to provide input to the planning process or attend meetings to ensure identified mitigation efforts are regionally appropriate and consistent with those identified within other communities in the region. Your jurisdiction is invited to attend the upcoming meeting shown below.

The final planning meeting will be held:

- Wednesday, January 10, 2024, at 6:00pm - Kossuth County Emergency Response & Training Complex – 219 S. Phillips St, Algona, IA 50511
- OR join online at <https://us02web.zoom.us/j/81187786153> or call (312) 626-6799, meeting ID 811 8778 6153

Please RSVP to the meeting by contacting Becky Appleford at rappleford@jeo.com or (217) 741-0117. For more information on this planning effort, you can visit the project website at <https://www.jeo.com/KossuthCountyHMP> or please feel free to contact me.

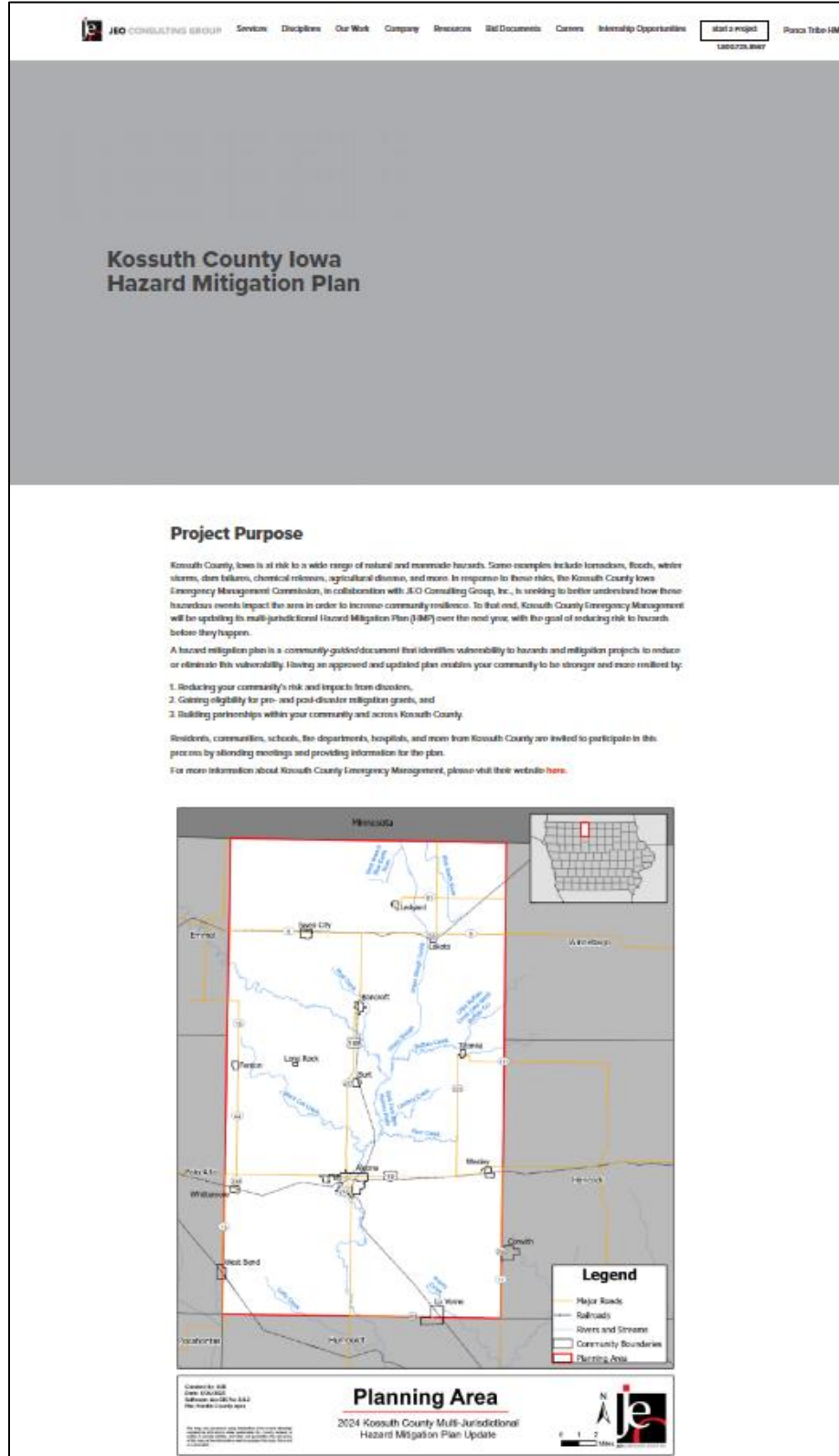
Sincerely,



Becky Appleford
JEO Project Manager

Project Website

The project website can be accessed through this link: <https://www.jeo.com/KossuthCountyHMP>



APPENDIX B

PUBLIC MEETING MATERIALS AND

WORKSHEETS

Contents:

1. Example of Community Profile with Questions
2. Example of Plan Integration Worksheet.
3. Round 1 Meeting PowerPoint
4. Round 2 Meeting PowerPoint

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Example of Community Profile with Questions

<div>Section Seven: City of Burt Community Profile</div> <div>Community Profile</div> <div>City of Burt</div> <div>Kossuth County Hazard Mitigation Plan 2024</div> <div>Name(s): _____ Date: _____</div> <div>Please answer the questions in red. Your responses are critical for completing this Community Profile. If you are unsure of any questions, think of who could supply the information - please provide their name and position in the community.</div> <div>Worksheets Due By: _____</div> <div>Completed Community Profiles and other worksheets can be returned to Anthony Kohel at JEO Consulting Group, 2000 Q Street, Ste 500, Lincoln, NE 68503; or by email at akohel@jeo.com. If you have any questions, please call 402-474-8753.</div> <div>Kossuth County Hazard Mitigation Plan 2024</div>
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Section Seven: City of Burt Community Profile

Local Planning Team

Table BUR.1: Burt Local Planning Team

Name	Title	Jurisdiction

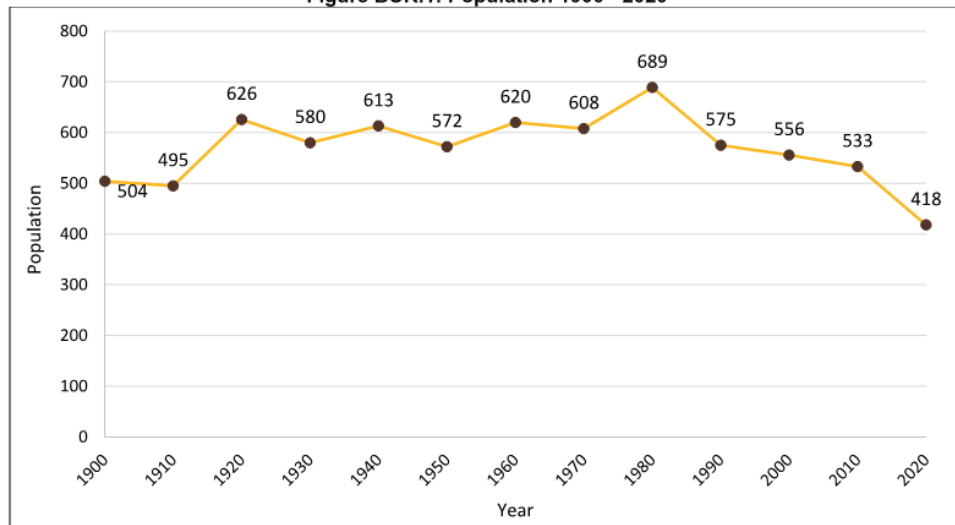
Location and Geography

The City of Burt is located in central Kossuth County and covers an area of 0.44 square miles. The main waterways in the area include the East Fork Des Moines River, which runs about two miles east of the city, and Smith Pool which is located approximately four miles northeast of Burt.

Demographics

Burt's estimated population in 2021 was 578. The following figure displays the historical population trend from 1900 to 2020. This figure indicates that the population of Burt has decreased since 1980. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which can make implementation of mitigation projects fiscally challenging. Burt's population accounted for 3.9% of Kossuth County's population in 2021.¹

Figure BUR.1: Population 1900 - 2020

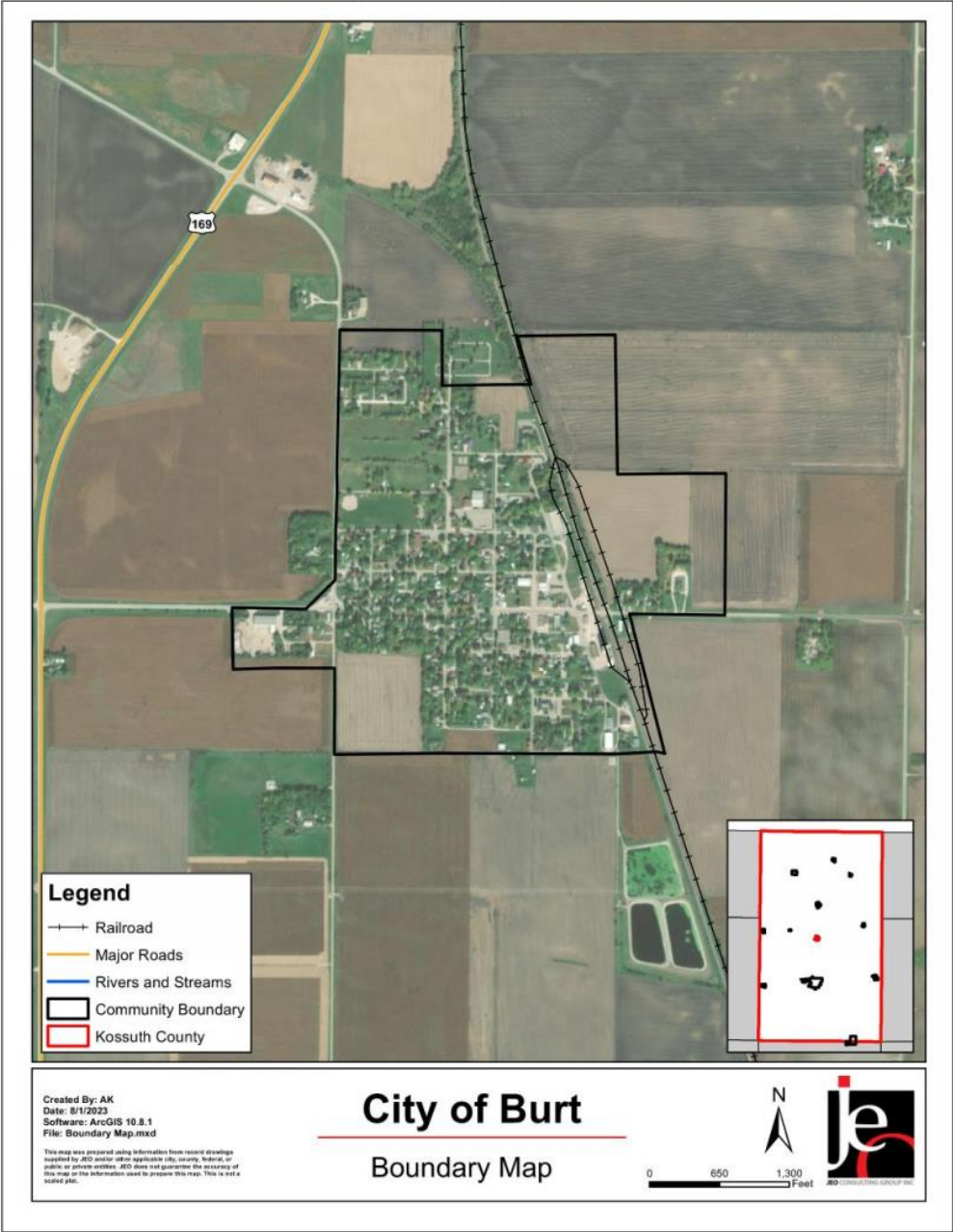


Source: U.S. Census Bureau

¹ United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." [database file]. <https://data.census.gov>.

Section Seven: City of Burt Community Profile

Figure BUR.2: City of Burt

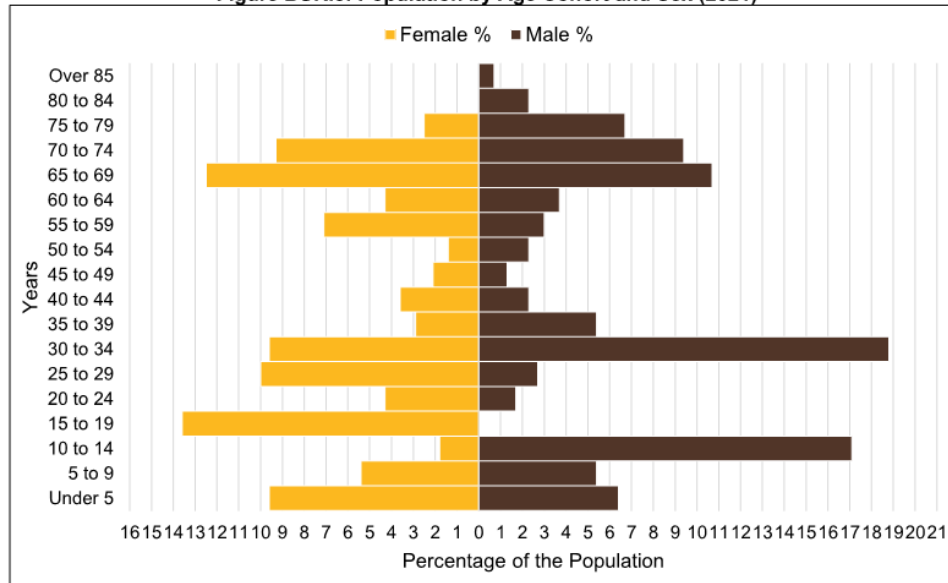


Section Seven: City of Burt Community Profile

The young, elderly, and minority populations may be more vulnerable to hazards than other groups. Looking at Burt's population:

- **8.8% is non-white.** Since 2010, Burt became more racially diverse. In 2010, 2.1% of the Burt's population was non-white. By 2021, 8.8% was non-white.²
- **Median age of 34.4.** The median age of Burt was 34.4 years old in 2021. The population became younger since 2010, when the median age was 38.6.³

Figure BUR.3: Population by Age Cohort and Sex (2021)



Source: U.S. Census Bureau⁴

The figure above shows Burt's population percentage broken down by sex and five-year age groups. Burt's population is fairly well spread throughout age groups. This indicates that the population is likely to remain stable in the future.

² United States Census Bureau. "2021 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." <https://data.census.gov/>.

³ United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

⁴ United States Census Bureau. "2021 Census Bureau American Community Survey: S0101: Age and Sex." <https://data.census.gov/>.

Section Seven: City of Burt Community Profile

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards like extreme heat and flooding than other groups. Burt's population has:

- **32.7% of people living below the poverty line.** The poverty rate (32.7%) in the City of Burt was higher than the state's poverty rate (11%) in 2021.⁵
- **\$49,688 median household income.** Burt's median household income in 2021 (\$49,688) was \$15,741 lower than the state (\$65,429).⁶
- **10.4% unemployment rate.** In 2021 Burt had a higher unemployment rate (10.4%) when compared to the state (3.9%).⁷
- **19.3% of workers commuted 30 minutes or more to work.** Fewer workers in Burt commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (19.3% compared to 46.4%).⁸

Major Employers

What are the major employers in Burt?

Do a large percentage of residents commute to other communities? If so, to which ones?

Housing

Multiple factors inform the vulnerability of housing units to hazard events. Housing age, for example, may indicate which housing units were built prior to the development of state building codes. Older houses and vacant housing are generally more vulnerable to hazards if poorly maintained. Additionally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renters are particularly vulnerable, as renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. Renters are less likely than homeowners to have flood insurance, have ready access to financial resources to evacuate, or to know their risks to flooding and other hazards. Burt's housing stock has:

⁵ United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

⁶ United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

⁷ United States Census Bureau. "2021 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." <https://data.census.gov/>.

⁸ United States Census Bureau. "2021 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." <https://data.census.gov/>.

Section Seven: City of Burt Community Profile

- **75.6% of housing built prior to 1970.** Burt has a larger share of housing built prior to 1970 than the state (75.6% compared to 49.9%).⁹
- **15% of housing units vacant.** Burt has a higher vacancy rate (15%) compared to the rest of the state (9.3%).¹⁰
- **1.2% mobile and manufactured housing.** The City of Burt has a smaller share of mobile and manufactured housing (1.2%) compared to the state (3.5%).¹¹
- **9.8% renter-occupied.** The rental rate of Burt was 9.8% in 2021. This is lower than the state's rate of 28.4%.¹²

Does the community have a large number of mobile homes? Where are they located?

Broadband Access

Internet or broadband access – through Wi-Fi or cellphone coverage – is a critical means of sharing and receiving information regarding hazardous events, including storm warnings, evacuation orders, or weather updates. Rural communities often lack adequate internet or broadband access. However, internet access is as vital a utility as electricity, as seen through the COVID-19 pandemic when many people worked or attended school from home.

- **82.3% of households have a broadband internet subscription.** Burt has a smaller share of households with broadband (83.8%) compared to the state (84.9%).¹³

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Burt has a mayor, a five-member city council, and the following offices.

Please check the following list and add/remove any additional community offices, departments, or committees:

- **City Manager**
- **Clerk/Treasurer**
- **Attorney**
- **Assistant City Manager**

⁹ United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

¹⁰ United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

¹¹ United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

¹² United States Census Bureau. "2021 Census Bureau American Community Survey: DP04: Selected Housing Characteristics." <https://data.census.gov/>.

¹³ United States Census Bureau. "2021 Census Bureau American Community Survey: DP02: Selected Social Characteristics in the United States." <https://data.census.gov/>.

Section Seven: City of Burt Community Profile

- *Chief of Police*
- *Fire Chief*
- *Wastewater Plant Superintendent*
- *Water/Sewer Superintendent*
- *Solid Waste Superintendent*
- *Street Superintendent*
- *Airport Authority Chairperson*
- *City Inspector*
- *Economic Development Director*
- *Electric Department Superintendent*
- *Library Board Chairperson*
- *Parks Superintendent*
- *GIS/Zoning Administrator*
- *Public Transportation Director*
- *Other:* _____

Capability Assessment

The planning team assessed the City of Burt's hazard mitigation capabilities by reviewing local existing policies, regulations, plans, and programs related to hazard mitigation. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Is a large portion of funds already dedicated to a specific project? If yes which project?

Please check the right column in the following table for your community. The table includes responses from the 2019 HMP. If there have been changes or updates, please cross out the answer and provide the updated answer.

Table BUR.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	
	Capital Improvements Plan	
	Economic Development Plan	
	Emergency Operations Plan	
	Floodplain Management Plan	
	Storm Water Management Plan	
	Zoning Ordinance	
	Subdivision Regulation/Ordinance	
	Floodplain Ordinance	

Section Seven: City of Burt Community Profile

Survey Components/Subcomponents		Yes/No
	Building Codes	Yes
	Source Water Protection Plan	
	Water System Emergency Response Plan	
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	
	Floodplain Administration	
	GIS Capabilities	
	Chief Building Official	
	Civil Engineering	
	Local Staff Who Can Assess Community's Vulnerability to Hazards	
	Grant Manager	
	Mutual Aid Agreement	
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1 & 6 Year Plan	
	Applied for grants in the past	
	Awarded a grant in the past	
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	
	Gas/Electric Service Fees	
	Storm Water Service Fees	
	Water/Sewer Service Fees	
	Development Impact Fees	
	General Obligation Revenue or Special Tax Bonds	
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	
	Natural Disaster or Safety related school programs	
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

What are some of the reasons why the community is not a member of the National Flood Insurance Program (NFIP)?

Section Seven: City of Burt Community Profile

Please rate your jurisdiction's overall capability in the following ways (Limited, Moderate, or High)

Table BUR.3: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	
Staff/expertise to implement projects	
Community support to implement projects	
Time to devote to hazard mitigation	
Ability to expand and improve identified capabilities to achieve mitigation	

Social Vulnerability

FEMA's National Risk Index is a new mapping tool that analyzes a community's risk to natural hazards on a scale of 0 (lowest possible value) to 100 (highest possible value). The overall risk for Kossuth County, which includes Burt, is Relatively Low (56.35). The average for the State of Iowa is 43.31.¹⁴

- **Social Vulnerability:** Social groups in Kossuth County have a Very Low (19.4) susceptibility to adverse impacts of natural hazards when compared to the rest of the U.S.
- **Community Resilience:** Communities in Kossuth County have a Very High (82.1) ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.

An additional tool developed by Headwaters Economics, the Rural Capacity Index, evaluates rural communities and counties nationwide for local capacity. Capacity includes the staffing, resources, and expertise to both apply for funding and fulfill reporting requirements, as well as design, build, and maintain infrastructure products over the long term. Communities lacking local capacity often have the greatest need for infrastructure investments, particularly rural communities and communities of color. The Rural Capacity Index helps identify communities with limited capacity on a scale of 0 (no capacity) to 100 (high capacity). This index is based on 10 variables that can function as proxies for community capacity. The following table lists the components and scores for the City of Burt compared to the county.

Table BUR.4: Rural Capacity Index

Components of Index	City of Burt	Kossuth County
County is Metropolitan?	No	No
Has a Head of Planning?	No	Yes
Has a College or University?	No	No
Adults with Higher Education:	9%	18%

¹⁴ Federal Emergency Management Agency. "National Risk Index". Accessed May 2023. <https://hazards.fema.gov/nri/map>.

Section Seven: City of Burt Community Profile

Components of Index	City of Burt	Kossuth County
Families Below Poverty Level:	14%	7%
Households with Broadband:	72%	78%
People without Health Insurance:	6%	5%
Voter Turnout:	80%	80%
Income Stability Score (0 to 100):	42	42
Population Change (2000 to 2019):	-44	-2,350
Overall Rural Capacity Index Score (0-100)	43	66

Source: Headwaters Economics¹⁵

Plan Integration

Information will be added for the Round 2 meeting.

Future Development Trends

What has changed over the past five years? (For example: new housing or businesses? Demolished buildings? New roads or areas of improvement?)

Were any new structures developed in the floodplain or other hazardous areas? (For example, near chemical sites, the Wildland-Urban Interface, dam or levee inundation areas?) If so, what types of structures and where were they developed?

How is development in the floodplain regulated?

Are any new housing developments or new businesses/industry planned for the next five years? Where?

¹⁵ Headwaters Economics. January 2022. "Rural Capacity Map". Accessed May 2023.
<https://headwaterseconomics.org/equity/rural-capacity-map/>.

Section Seven: City of Burt Community Profile

Does your community have a future land use map? If yes, please provide a copy.

Community Lifelines

Each participating jurisdiction identified community lifelines that are vital for disaster response and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. The FEMA-recognized lifelines include: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communications; Transportation; and Hazardous Material facilities.



Community lifeline facilities should be identified based on the seven Community Lifelines as identified by FEMA: Safety and Security; Food, Water, and Shelter; Health and Medical; Energy; Communications; Transportation; and Hazardous Materials. These may include: Alert Sirens, Fire Halls, Police Stations, Municipal Buildings, Medical Clinics, Wells, Water Storage, Lift Stations, Power Substations, etc.

In the table below, please list any community lifelines along with their address. Please also indicate if these facilities are mass shelter locations and if they have a backup generator.

Table BUR.5: Community Lifelines

Name	Address or Intersection	Shelter (Y/N)	Generator (Y/N)

Figure BUR.4: Community Lifelines

Map to be added for Round 2 Meetings

Section Seven: City of Burt Community Profile

Transportation

Burt's major transportation routes include U.S. Highway 169 and County Roads B16 and B19. The most traveled route is Highway 169 with an average of 2,150 vehicles daily, 437 of which are trucks.¹⁶ Burt has a Union Pacific rail line that travels north-south through the community. The closest airport is the Algona Municipal Airport, approximately nine miles southwest of Burt.¹⁷ Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

What other routes are a concern?

Have any significant transportation events occurred locally? Please describe.

Hazardous Materials

The Hazardous Materials Lifeline includes chemical storage facilities, pipelines, and transported chemical tanks. According to the National Pipeline Mapping System, there are no gas transmission pipelines or hazardous liquid pipelines that travel near community.¹⁸

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are six chemical storage sites within or near Burt that contain hazardous materials (listed below).

Table BUR.6: Chemical Storage Lifelines

Facility Name	Address
Burt Classic Stop	802 E Walnut Street
Burt LP Plant	3009 310th Street
Burt Swimming Pool	606 4th Street
Burt Water Department	111 Beech Street
StateLine Cooperative - North Burt Facility	1201 330th Street
StateLine Cooperative - South Burt Facility	102 Walnut Street

Source: E-Plan¹⁹

Are chemicals regularly transported along local routes? If yes, which chemicals and which routes?

¹⁶ Iowa Department of Transportation. 2021. "Iowa Traffic Data". Accessed May 2023.

<https://iowadot.maps.arcgis.com/apps/MapSeries/index.html?appid=0cce99afb78e4d3b9b24f8263717f910>.

¹⁷ Iowa Department of Transportation. 2021. "Public Use Airports in Iowa". Accessed May 2023. <https://iowadot.gov/aviation/airport-information>.

¹⁸ National Pipeline Mapping System. 2022. "Public Viewer." Accessed May 2023. <https://pvnpm.phmsa.dot.gov/PublicViewer/>.

¹⁹ E-Plan – Emergency Response Information System. 2022. "Facility Search." Accessed November 2022. <https://erplan.net/eplan/actions/facilitySearch.htm>.

Section Seven: City of Burt Community Profile

Have chemical spills occurred locally? Please describe the impacts.

Parcel Improvements and Valuation

The planning team requested GIS parcel data from the County Assessor as of May 2023. This data allowed the planning team to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds, etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following tables.

Data to be included at a later date.

Table BUR.7: Burt Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Parcels	Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain

Source: County Assessor, 2023

Table BUR.8: Burt Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Number of Parcels	Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain

Source: County Assessor, 2023

Table BUR.9: Burt Flood Map Products

Type of Product	Product ID	Effective Date	Details

Source: FEMA Flood Map Service Center²⁰

²⁰ Federal Emergency Management Agency. 2023. "FEMA Flood Map Service Center." Accessed May 2023. <https://msc.fema.gov/portal/home>.

Section Seven: City of Burt Community Profile

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see *Section Four: Risk Assessment*. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Hazards of Top Concern

From the following list, please circle 3 to 5 hazards of greatest concern for your jurisdiction.

- Animal and Plant Disease
- Dam Failure
- Drought
- Earthquakes
- Extreme Temperatures
- Flooding
- Grass and Wildland Fire
- Hazardous Materials Release
- Human Infectious Diseases
- Infrastructure Failure
- Severe Thunderstorms (includes Hail & Lightning)
- Severe Winter Storms
- Terrorism and Civil Unrest
- Tornado and Windstorm
- Transportation Incident

As part of hazard prioritization, please answer the following questions for each of the top hazards you identified.

Hazard #1: _____

Describe past events which have impacted your community. Please include the date of event, any property damages, or repairs that were required.

Why was this hazard selected as a top concern for the community? What specific vulnerabilities does the community have to this hazard?

Section Seven: City of Burt Community Profile

Have you completed any projects to reduce your risk to this hazard?

What projects are needed in the future to reduce risk to your community?

Hazard #2: _____

Describe past events which have impacted your community. Please include the date of event, any property damages, or repairs that were required.

Why was this hazard selected as a top concern for the community? What specific vulnerabilities does the community have to this hazard?

Have you completed any projects to reduce your risk to this hazard?

What projects are needed in the future to reduce risk to your community?

Hazard #3: _____

Section Seven: City of Burt Community Profile

Describe past events which have impacted your community. Please include the date of event, any property damages, or repairs that were required.

Why was this hazard selected as a top concern for the community? What specific vulnerabilities does the community have to this hazard?

Have you completed any projects to reduce your risk to this hazard?

What projects are needed in the future to reduce risk to your community?

Hazard #4: _____

Describe past events which have impacted your community. Please include the date of event, any property damages, or repairs that were required.

Why was this hazard selected as a top concern for the community? What specific vulnerabilities does the community have to this hazard?

Have you completed any projects to reduce your risk to this hazard?

Section Seven: City of Burt Community Profile

What projects are needed in the future to reduce risk to your community?

Hazard #5: _____

Describe past events which have impacted your community. Please include the date of event, any property damages, or repairs that were required.

Why was this hazard selected as a top concern for the community? What specific vulnerabilities does the community have to this hazard?

Have you completed any projects to reduce your risk to this hazard?

What projects are needed in the future to reduce risk to your community?

Mitigation Strategy

Information will be added for the Round 2 meeting.

Plan Maintenance

Information will be added for the Round 2 meeting.

Example of Plan Integration Worksheet



Kossuth County

Hazard Mitigation Plan

Plan Integration Worksheet

JEO Consulting Group
January 2024

Name(s): _____ Jurisdiction: _____

1

Introduction

Thank you for participating in the Kossuth County Hazard Mitigation Plan.

The Hazard Mitigation Plan determines vulnerabilities to natural and human-caused hazards in your jurisdiction, then identifies mitigation projects to reduce or eliminate those vulnerabilities. An approved HMP is a requirement of the Federal Emergency Management Agency (FEMA) for jurisdictions to become eligible for Hazard Mitigation Assistance grants.

FEMA encourages communities to integrate their hazard mitigation plan with other planning mechanisms, such as their building codes, comprehensive plans, zoning ordinances, etc. to ensure that plans across a community are consistent and reflect overall goals.

This worksheet will identify the ways that other plans in your community are, or could be, aligned with hazard mitigation principles. The information you provide will be used to develop the plan integration section of your jurisdictional profile.

Please complete this worksheet and return to JEO Consulting Group by February 9.

Email: akohel@jeo.com

Phone: 402-474-8753

Fax: 402-435-4110

Mail: JEO Consulting Group

c/o Anthony Kohel

2000 Q Street, Ste 500

Lincoln, NE 68503

Step 1

Please complete the following table.

Which of these plans/ordinances does your jurisdiction have?

Plan/Ordinance	Yes/No	Year of most recent update
Comprehensive Plan		
Zoning Ordinance		
Subdivision Regulations		
Floodplain Regulations/Ordinance		
Building Code		What IBC Edition is Adopted?
Capital Improvements Plan		
Wellhead Protection Plan		
Water System Emergency Response Plan		
Community Wildfire Protection Plan		
Other:		
Other:		

For any additional plans your community has, e.g. Drought Management Plan, Evacuation Plan, Stormwater Management Plan, etc., please send JEO a copy.

Step 2

For the plans/ordinances which your community has, please complete the corresponding sections in this worksheet. **Do not complete sections for plans/ordinances which your community does not have on record.**

Annual Municipal Budget

Are municipal funds sufficient to pursue new capital projects or are they limited to maintaining current facilities and municipal systems?

Are a large portion of municipal funds already dedicated to a specific project? If yes, which project (i.e. installing a new municipal well or improving transportation routes).

How has the amount of municipal funds increased or decreased over recent years?

Which projects identified in the hazard mitigation plan are already included in the municipal budget?

What grants have you applied for in the last five years?

Please list which grants your community has been awarded.

Comprehensive Plan

Does the comprehensive plan discuss natural hazards? ☐ Yes ☐ No

If yes, which hazards are discussed?

Does your comprehensive plan:

Contain goals/objectives aimed at Safe Growth: ☐ Yes ☐ No ☐ In future update

Limit density in areas adjacent to known hazardous areas: ☐ Yes ☐ No ☐ In future update

Encourage infill development: ☐ Yes ☐ No ☐ In future update

Encourage "clustering of development" in sensitive areas: ☐ Yes ☐ No ☐ In future update

Identify areas that need emergency shelters: ☐ Yes ☐ No ☐ In future update

Encourage preservation of open space in hazard-prone areas: ☐ Yes ☐ No ☐ In future update

Is there a plan or timeline to update your comprehensive plan? ☐ Yes ☐ No

If yes, explain the plan or timeline.

How will you incorporate the information from the hazard mitigation plan into your next comprehensive plan? Please consider the items above and any other enhancements that you would like to include in future comprehensive plan updates.

Zoning Ordinance / Floodplain Ordinance / Subdivision Regulations

Is there a plan or timeline to update your Zoning Ordinance / Floodplain Ordinance / Subdivision Regulations?

☐ Yes ☐ No

If yes, explain the plan or timeline.

Does the Zoning Ordinance / Floodplain Regulations / Subdivision Regulations:

Contain floodplain maps? ☐ Yes ☐ No ☐ In future update

Prohibit development within the floodplain? ☐ Yes ☐ No ☐ In future update

Discourage development in the floodplain? ☐ Yes ☐ No ☐ In future update

Limit population density in the floodplain? ☐ Yes ☐ No ☐ In future update

Identify floodplain areas as parks or open space? ☐ Yes ☐ No ☐ In future update

Require more than one foot of elevation above Base Flood Elevation in the floodplain?

☐ Yes ☐ No ☐ In future update

Prohibit filling of wetlands? ☐ Yes ☐ No ☐ In future update

Discourage development near chemical storage sites? ☐ Yes ☐ No ☐ In future update

Discourage development along major transportation routes? ☐ Yes ☐ No ☐ In future update

Limit development in the ETJ? ☐ Yes ☐ No ☐ In future update

Consider wildfire and the wildland urban interface? ☐ Yes ☐ No ☐ In future update

Include well setback requirements? ☐ Yes ☐ No ☐ In future update

Include the ability to implement water restrictions? ☐ Yes ☐ No ☐ In future update

Do subdivision regulations allow density transfers in hazard areas?

☐ Yes ☐ No ☐ In future update

Do the subdivision regulations restrict subdivision of land within or adjacent to the floodplain?

☐ Yes ☐ No ☐ In future update

Building Code

If the building codes are based on the International Building Codes, what year/version is in effect?

Have you made any amendments to the Code? If yes, please describe.

Capital Improvement Plan

Is there a plan or timeline to update your Capital Improvement Plan? ☐ Yes ☐ No

If yes, explain the plan or timeline.

Does the Capital Improvement Plan include:

Storm water projects? ☐ Yes ☐ No ☐ In future update

Upsizing of culverts and drainage structures? ☐ Yes ☐ No ☐ In future update

Regular maintenance for drainage structures? ☐ Yes ☐ No ☐ In future update

Upgrading storm sewer systems? ☐ Yes ☐ No ☐ In future update

Regular maintenance for the storm sewer system? ☐ Yes ☐ No ☐ In future update

Improving transportation routes for drainage? ☐ Yes ☐ No ☐ In future update

Widening roadways that would improve evacuations if they were required?
☐ Yes ☐ No ☐ In future update

Bridge improvements? ☐ Yes ☐ No ☐ In future update

Installing new municipal wells? ☐ Yes ☐ No ☐ In future update

Upsizing water distribution pipes? ☐ Yes ☐ No ☐ In future update

Installing water meters for residential structures? ☐ Yes ☐ No ☐ In future update

Updating electrical distribution system? ☐ Yes ☐ No ☐ In future update

Burying powerlines? ☐ Yes ☐ No ☐ In future update

Looping electrical distribution to critical facilities? ☐ Yes ☐ No ☐ In future update

- | | |
|---|--|
| Installing emergency generators in critical facilities? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Constructing a new fire hall? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Improving the existing fire hall? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Constructing a new police headquarters? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Improving the existing police headquarters? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Constructing a new public works facility? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Improving the existing public works facility? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Constructing a new community center? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Improving the existing community center? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Constructing a community storm shelter? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Constructing a new water treatment facility? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Improving the existing water treatment facility? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Constructing other community owned structure(s)? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |
| Improving other existing community owned structure(s)? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> In future update |

What other types of projects are presently included in the capital improvement plan?

Round 1 Meeting PowerPoint Slides



Housekeeping

- Worksheets
 - In-Person: Hard copies provided
 - Virtual: Download from Google Drive link:
 - <https://bit.ly/KossuthCounty-GoogleDrive>
 - Do not fill them out in the Google Drive
- Virtual attendees stay muted unless asking a question. Questions can also be typed in the chat
- This meeting is being recorded
 - Recorded meeting will be available via the project website




Agenda	
01	Introductions
02	Hazard Mitigation Plan Overview
03	Brief Grants Overview
04	Worksheet Discussion
05	Project Schedule and Next Steps
06	Question and Answer




Let us know you're here!


- If joining in-person:
 - Be sure to sign in
- If joining via Zoom:
 - Use the chat box: name & jurisdiction
 - Send an email to Anthony: akohel@jeo.com
 - Include everyone that attended
- From JEO:



Becky Appleford
PROJECT MANAGER




Erin Pingel
FUNDING SPECIALIST

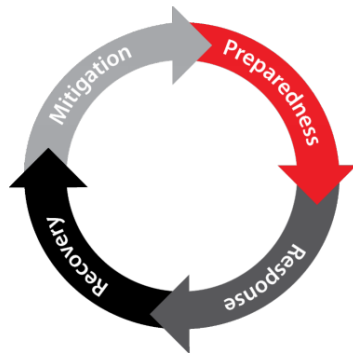


Anthony Kohel
PLANNER

**Hello
My Name Is**



Hazard Mitigation – What is it?



FEMA defines Mitigation as

“...efforts to reduce loss of life and property by lessening the impact of disasters; taking action now—before the next disaster—to reduce human and financial consequences later (analyzing risk, reducing risk, insuring against risk).”



Why Develop and Update the Plan?

- Provides the foundation for a stronger, more resilient community
- Federal regulations require HMPs for communities to be eligible for FEMA Grant Programs
- HMPs must be updated and approved by FEMA every 5 years
- And..

Mitigation Works!

Federal Mitigation Grants save \$6 per \$1 spent

Exceeding Codes saves \$4 per \$1 spent

From a report by the Multi-hazard Mitigation Council
of the National Institute of Building Sciences



FEMA Mitigation Funding

Disaster Cycle Grant Programs



Public Assistance (PA) 406 Mitigation
Supports communities' recovery from major disasters by providing mitigation funding opportunities to restore and strengthen public infrastructure. HMA works to enhance coordination with PA.



Hazard Mitigation Grant Program (HMGP)
Implements long-term hazard mitigation measures after a major disaster declaration.



HMGP Post-Fire
Helps communities implement hazard mitigation measures after wildfire disasters.

Annual Cycle Grant Programs



Flood Mitigation Assistance (FMA)
Reduces or eliminates the risk of repetitive flood damage to buildings and structures insured under the National Flood Insurance Program (NFIP).



Building Resilient Infrastructure and Communities (BRIC)
Supports the undertaking of new and innovative projects that reduce the risks faced from disasters and natural hazards.



Pre-Disaster Mitigation (PDM)
Supports mitigation projects before a disaster strikes to build stronger, more resilient communities.



FEMA Funding Contact



HMGP



HMGP Post Fire



BRIC



FMA

Contact:

Iowa HSEMD
Dusty Pogones, SHMO
(515) 725-9364

HSEMDMitigation@iowa.gov

<https://homelandsecurity.iowa.gov/grants-overview/grants/#HMA>



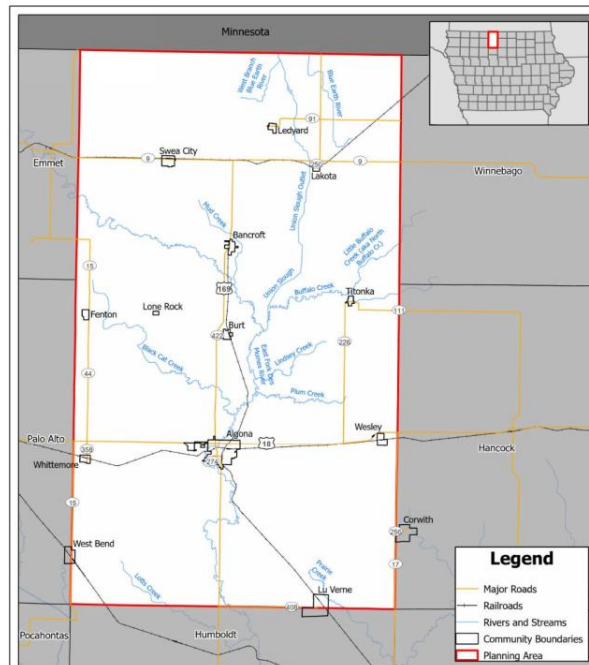
What Types of Projects Have Been Funded in Iowa?

- Warning Systems/Tornado Sirens
- Backup Generators
- Property Acquisition
- Property Elevations
- Safe Rooms – Public and Private Structures
- Utility Protective Measures (Electric, Gas, etc.)
- Water and Sanitary Sewer System Protective Measures
- Stormwater Management – Diversions, Detention/Retention Basins, Culverts
- Local Flood Control Systems for Community Lifelines



Participating Jurisdictions

- All taxing authorities within Kossuth County are eligible and encouraged to participate
 - **County**
 - **Cities**
 - **School Districts**
 - **Others**
- Stakeholders: Public, Businesses, etc.



Created by: ASL
Date: 4/24/2023
Software: ArcGIS Pro 3.0.3
File: Kossuth County.aprx

This map and associated data were prepared from source data supplied by the Iowa Department of Transportation. The user assumes all responsibility for the accuracy and completeness of the data and the map.

Planning Area

2024 Kossuth County Multi-Jurisdictional Hazard Mitigation Plan Update



What is Required to Participate?

1. Participate in the planning process
 - Attend meetings, watch recordings
2. Assist in data collection
 - Complete and return worksheets!
3. Identify mitigation actions
 - An action for every hazard
4. Review plan drafts
5. Adopt the plan by resolution
 - During public review period – take to the council!



What will the Plan Look Like?

Upfront County-Wide Portion

- Description of Planning Process
- County Profile
- Discussion of Capabilities
- All Hazards Risk Assessment
- Mitigation Strategy Summary
- Plan Implementation, Funding, and Maintenance

Participant Sections (or Jurisdictional Profiles)



Goals of the Plan

1. Minimize the vulnerability of the people and their property in Kossuth County to the impacts of hazards.
2. Protect critical facilities, infrastructure and other community assets from the impacts of hazards.
3. Improve education and awareness regarding hazards and risk in Kossuth County.
4. Strengthen communication regarding hazard mitigation among agencies and between agencies and the public.
5. Develop or improve planning, ordinances, and building codes to increase capabilities, procedures, and resiliency across Kossuth County.



Hazards Profiled for 2024 Plan

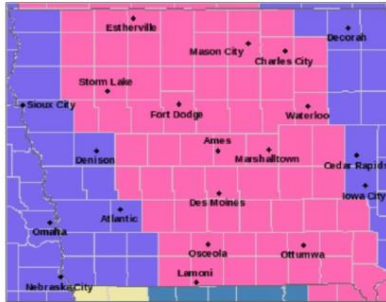
- Animal and Plant Disease
- Dam Failure
- Drought
- Earthquake
- Extreme Temperatures
 - Includes extreme heat & cold
- Flooding
- Grass or Wildfire
- Hazardous Materials Release
 - Includes fixed site & transportation
- Human Infectious Disease
- Infrastructure Failure
- Severe Thunderstorms
 - Includes hail and lightning
- Severe Winter Storms
- Terrorism and Civil Unrest
 - Includes cyber attack
- Tornado and Windstorm
- Transportation Incident



What's happened since 2019?

Winter storm warning in effect from 9 a.m. Friday

By The Perry News - January 13, 2022



NEWS

Derecho leaves some crops in Kossuth County flattened

by: Roger Riley

Posted: Jul 6, 2022 / 05:50 PM CDT

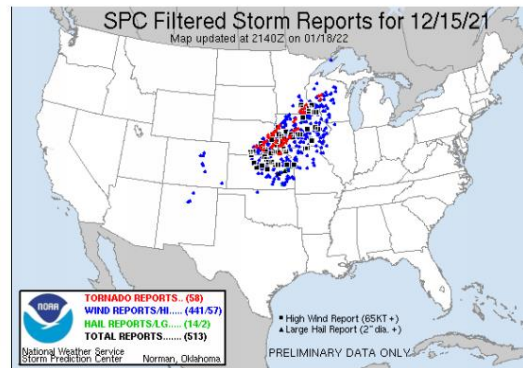
Updated: Jul 6, 2022 / 05:50 PM CDT

Newly reported COVID-19 cases, hospitalizations rise in weekly Iowa coronavirus update



Richard Lane
Des Moines Register

Published 12:37 p.m. CT May 4, 2022



Worksheets

Due September 11th



Review your Jurisdiction's Draft Profile

15+ Pages

- Local Planning Team
- Location and Geography
- Development Trends
- Demographics
- Employment and Economics
- Housing
- Capability Assessment
- Plans and Studies
- Community Lifelines
- Hazard Prioritization and Mitigation Strategy

Jurisdiction-specific red questions throughout draft



Section Seven: City of Algona Community Profile

Community Profile

City of Algona

Kossuth County
Hazard Mitigation Plan 2024

Name(s): _____ Date: _____

Please answer the questions in red. Your responses are critical for completing this Community Profile. If you are unsure of any questions, think of who could supply the information, please provide their name and position in the community.

Worksheets Due By: _____

Completed Community Profiles and other worksheets can be returned to Anthony Kohel at JEO Consulting Group, 2000 Q Street, Ste 500, Lincoln, NE 68503; or by email at akohel@jeo.com. If you have any questions, please call 402-474-8753.

Kossuth County Hazard Mitigation Plan | 2024



Capability Assessment

- Review the Capability Assessment table and update any that are incorrect
- Fill in any missing information
- Rate your jurisdiction's Overall Capability in the table
 - Limited, Moderate, or High

Capability Assessment		Yes/No
Survey Components/Subcomponents		
Planning & Regulatory Capability	Comprehensive Plan	
	Capital Improvements Plan	
	Economic Development Plan	
	Emergency Operations Plan	
	Floodplain Management Plan	
	Storm Water Management Plan	
	Zoning Ordinance	
	Subdivision Regulation/Ordinance	
	Floodplain Ordinance	
	Building Codes	Yes
	Source Water Protection Plan	
	Water System Emergency Response Plan	
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Planning Commission		
Floodplain Administration		
Overall Capability		
Overall Capability		Limited/Moderate/High
Financial resources to implement mitigation projects		
Staff/expertise to implement projects		
Community support to implement projects		
Time to devote to hazard mitigation		
Ability to expand and improve identified capabilities to achieve mitigation		
Education & Outreach Capability	General Obligation Revenue or Special Tax Bonds	
	Other (if any)	
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex: CERT Teams, Red Cross, etc.		



Community Lifelines

- Identify lifelines (facilities) that are vital for community safety, disaster response, and essential for returning the jurisdiction's functions to normal

- Name
- Address/Location
- Shelter? (Y/N)
- Generator present? (Y/N)

Community Lifelines

Name	Address or Intersection	Shelter (Y/N)	Generator (Y/N)



Community Lifelines

lifelines@fema.dhs.gov

fema.gov/media-library/assets/documents/177222

Definition

A lifeline enables the continuous operation of critical business and government functions and is essential to human health and safety or economic security.

Purpose

- Root Cause Analysis
- Interdependencies
- Prioritization
- Ease of Communication

Assessing

- Status → What?
- Impact → So What?
- Actions → Now What?
- Limiting Factors → What's the Gap?

Stabilization

Occurs when basic lifeline services or capabilities are provided to survivors (may be temporary solutions requiring sustenance).

COMPONENTS of Lifelines



November 2019

Hazard Prioritization

Circle 3-5 hazards of most concern

In the space below identify:

- Past events and impacts
- Why it is a hazard of top concern
 - Risk to: People, Property, Economy, Capabilities, etc.
 - Problem Statements
- What specific areas have experienced impacts
- What has already been done
- What is needed in the future



Section Seven: City of Algona Community Profile

Hazard Prioritization

The Kossuth County Hazard Mitigation Plan evaluates a range of natural and manmade hazards which pose a risk to the county, communities, and other participants. For a review and analysis of identified regional hazards, please see Section Four: Risk Assessment. A full list of historical hazard occurrences can be found in the Kossuth County jurisdictional profile.

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the jurisdiction. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

Hazards of Top Concern
From the following list, please circle 3 to 5 hazards of greatest concern for your jurisdiction.

• Aerial and Plant Disease	• Human Infectious Diseases
• Dam Failure	• Infrastructure Failure
• Drought	• Severe Thunderstorms (includes Hail & Lightning)
• Earthquakes	• Severe Winter Storms
• Extreme Temperatures	• Terrorism and Civil Unrest
• Flooding	• Tornado and Windstorm
• Grass and Wildland Fire	• Transportation Incident
• Hazardous Materials Release	

As part of hazard prioritization, please answer the following questions for each of the top hazards you identified.

Hazard #1: _____

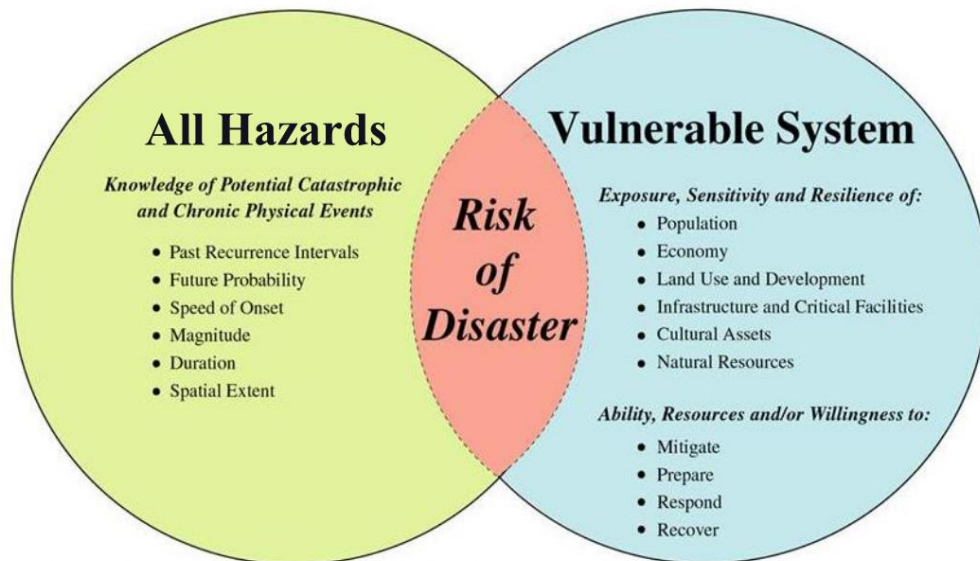
Describe past events which have impacted your community. Please include the date of event, any property damages, or repairs that were required.

Why was this hazard selected as a top concern for the community? What specific vulnerabilities does the community have to this hazard?

Kossuth County Hazard Mitigation Plan | 2024 17



Risk Assessment and Hazard Prioritization



<http://pubs.usgs.gov/fs/2011/3008/>



EMERGENCY MANAGEMENT KOSSUTH COUNTY

Top Hazard Example

Hazard #1: Flooding

Describe past events which have impacted your community. Please include the date of event, any property damages, or repairs that were required.

April 2015: Flooding damaged 2 homes and 1st Street

Sept 2017: Flooding closed several roads. Road repairs were required

June 2021: Flooding damaged the village hall, several businesses, and homes. Over \$500,000 in damages

Why was this hazard selected as a top concern for the community? What specific vulnerabilities does the community have to this hazard?

We have a creek that runs through the northern portion of town that floods if we get more than 1.5 inches of rain. We also have poor stormwater drainage on 1st Street and Main Street.

Have you completed any projects to reduce your risk to this hazard?

- Participate in the National Flood Insurance Program
- Regularly clean debris out of the creek
- Limit development in the floodplain
- Educate homeowners about flood risk

What projects are needed in the future to reduce risk to your community?

- Stream bank stabilization along the creek
- Improve drainage around 1st St and Main Street



Return Worksheets

– Due: Monday, September 11th

– Options to return completed draft profile worksheet:

– Email to Anthony Kohel: akohel@jeo.com

– Mail (Make a copy first)

JEO Consulting Group
Attn: Anthony Kohel
2000 Q Street, Suite 500
Lincoln, NE 68503



Next Steps

- Invite others to participate
 - Form a local hazard mitigation team
 - Share information with board/council
 - Involve stakeholder groups
 - Post project flyer (JEO has copies)
- Collect plans / organize resources
- Attend next meeting
- Visit project website:
 - <https://www.jeo.com/KossuthCountyHMP>



Return Worksheets

- Due: Friday, February 9th
- Options to return completed draft profile worksheet:
 - Email to Anthony Kohel: akohel@jeo.com
 - Mail (Make a copy first)
JEO Consulting Group
Attn: Anthony Kohel
2000 Q Street, Suite 500
Lincoln, NE 68503



Project Contacts

- **Kossuth County**

- Charissa Mueller, (515) 295-5904, cmueller@kossuthcounty.iowa.gov

- **JEO Consulting Group**

- Becky Appleford, (402) 392-9915, rappleford@jeo.com
- Anthony Kohel, (402) 474-8753, akohel@jeo.com

Let us know you attended!

- **In-Person**

- Sign-in Sheet

- **Online**

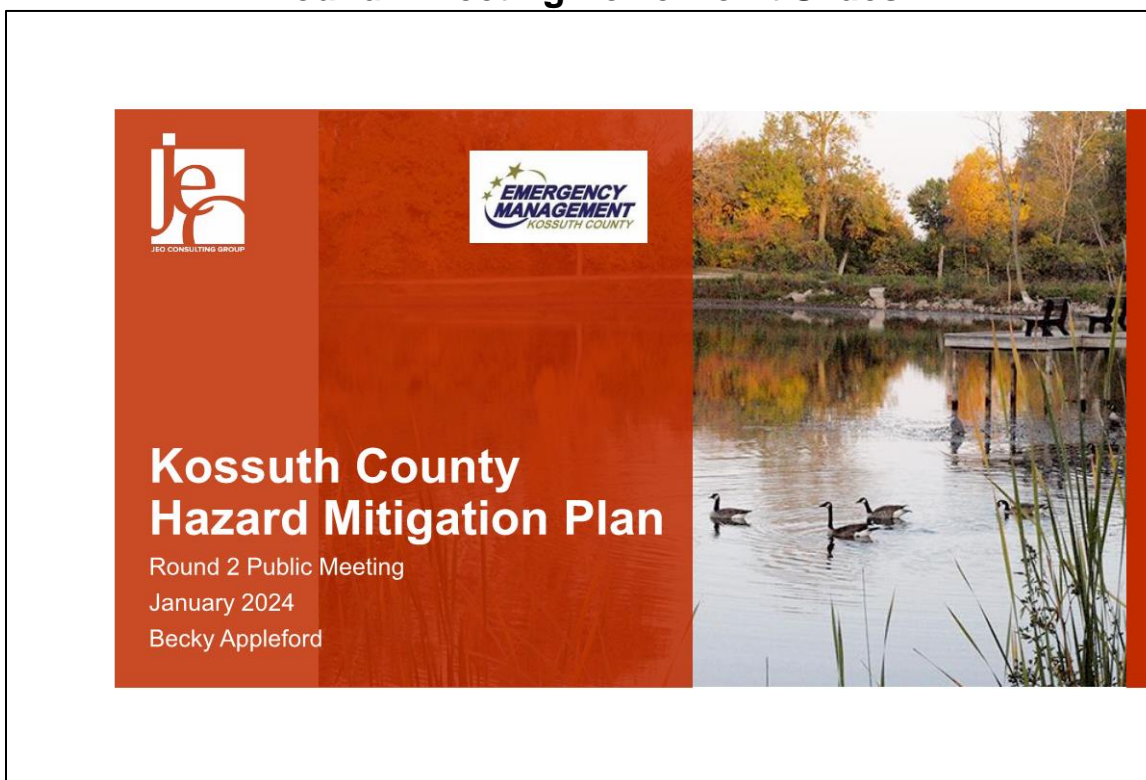
- Message in the Chat



THANK YOU!




Round 2 Meeting PowerPoint Slides



Housekeeping

- Worksheets
 - In-Person: Hard copies provided
 - Virtual: Download from Google Drive link:
 - <https://bit.ly/KossuthCounty-GoogleDrive>
 - Do not fill them out in the Google Drive
- Virtual attendees stay muted unless asking a question. Questions can also be typed in the chat
- This meeting is being recorded
 - Recorded meeting will be available via the project website





Agenda

01

Introductions

02

Hazard Mitigation Grants Overview

03

Worksheet Discussion


04

Project Schedule and Next Steps

05

Question and Answer





Let us know you're here!

– If joining in-person:

– Be sure to sign in


– If joining via Zoom:

– Use the chat box: name & jurisdiction


– Send an email to Anthony: akohel@jeo.com

– Include everyone that attended


– From JEO:



Becky Appleford
PROJECT MANAGER



Erin Pingel
FUNDING SPECIALIST



Anthony Kohel
PLANNER

**Hello
My Name Is**

Last Meeting...

- What is a Hazard Mitigation Plan?
 - Updating 2019 Kossuth County HMP
- Previous Primary Objectives: Community Lifelines (i.e., Critical Facilities), Hazard Identification, and Risk Assessment.
 - Reviewed draft profile
 - Identified top hazards of concern
 - Identified critical facilities
- Today's Primary Objectives: Mitigation Strategy and Plan Integration
 - Review updated draft profile
 - Update previous mitigation actions
 - Identify new mitigation actions
 - Integration of other planning documents
 - Plan maintenance



But First...FEMA Mitigation Funding

Disaster Cycle Grant Programs



Public Assistance (PA) 406 Mitigation
Supports communities' recovery from major disasters by providing mitigation funding opportunities to restore and strengthen public infrastructure. HMA works to enhance coordination with PA.



Hazard Mitigation Grant Program (HMGP)
Implements long-term hazard mitigation measures after a major disaster declaration.



HMGP Post-Fire
Helps communities implement hazard mitigation measures after wildfire disasters.

Annual Cycle Grant Programs



Flood Mitigation Assistance (FMA)
Reduces or eliminates the risk of repetitive flood damage to buildings and structures insured under the National Flood Insurance Program (NFIP).



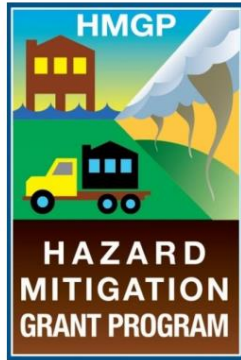
Building Resilient Infrastructure and Communities (BRIC)
Supports the undertaking of new and innovative projects that reduce the risks faced from disasters and natural hazards.



Pre-Disaster Mitigation (PDM)
Supports mitigation projects before a disaster strikes to build stronger, more resilient communities.



FEMA Mitigation Funding



- Triggered by presidential disaster declaration
- 75/25* cost share
 - *State 10%/Local 15%
- For use across the state
- Open applications; awards based on available funding



- Annual appropriations
- \$1 Billion in 2023
- 75/25* cost share
- Applications Period: September – January
- Award: 12-18 months after



- Annual appropriations
- \$800M in 2023
- 75/25* cost share
- Applications Period: September – January
- Award: 12-18 months after



FEMA Funding Contact



HMGP



HMGP Post Fire



BRIC



FMA


Contact:

Iowa Homeland Security & Emergency Management
Dusty Pogones, SHMO
(515) 725-9364

HSEMDMitigation@iowa.gov

<https://homelandsecurity.iowa.gov/grants-overview/grants/#HMA>



	Hazard Mitigation Grant Program	Hazard Mitigation Grant Program – Post Fire	Building Resilient Infrastructure and Communities	Flood Mitigation Assistance
Eligible Activities for FEMA Grants				
FEMA reviews all applications for eligibility, cost-effectiveness, technical feasibility, and effectiveness.				
This table gives common eligible activities but is not exhaustive.				
				
1. Mitigation Projects				
Property Acquisition	•	•	•	•
Structure Elevation	•	•	•	•
Mitigation Reconstruction	•	•	•	•
Flood Risk Reduction Measures	•	•	•	•
Stabilization	•	•	•	•
Dry Floodproofing Non-Residential Buildings	•	•	•	•
Tsunami Vertical Evacuation	•	•	•	
Safe Rooms	•	•	•	
Wildfire Mitigation	•	•	•	
Retrofitting	•	•	•	•
Generators	•	•	•	
Earthquake Early Warning Systems	•	•	•	
Innovative Mitigation Projects	•	•	•	•
2. Capability and Capacity Building				
New Plan Creation and Updates	•	•	•	•
Planning-Related Activities	•	•	•	•
Project Scoping/Advance Assistance	•	•	•	•
Financial Technical Assistance				•

Additional Mitigation Funding	
– USDA Grants	
– HUD – Community Development Block Grants	
– Natural Resources Conservation Service	
– US Forest Service	
– EPA	
– State Revolving Funds Program	
– And more!	
	



What will the Plan Look Like?

Upfront County-Wide Portion

- Description of Planning Process
- County Profile
- Discussion of Capabilities
- All Hazards Risk Assessment
- Mitigation Strategy Summary
- Plan Implementation, Funding, and Maintenance

Participant Sections (or Jurisdictional Profiles)



Connecting Problems with Solutions

1. Review hazard priorities and risk assessment.
2. Review 2018 mitigation actions.
3. Update 2018 mitigation actions.
4. Add new mitigation action(s).



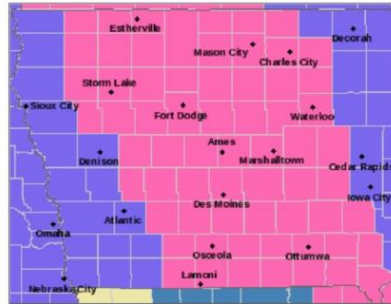
Mitigation Strategy Development



What's happened since 2019?

Winter storm warning in effect from 9 a.m. Friday

By The Perry News - January 13, 2022



Newly reported COVID-19 cases, hospitalizations rise in weekly Iowa coronavirus update



Richard Lane
Des Moines Register

Published 12:37 p.m. CT May 4, 2022

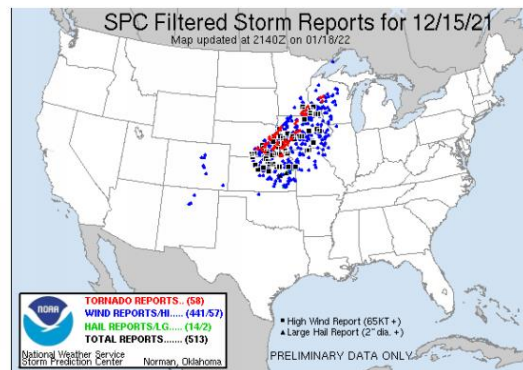
NEWS

Derecho leaves some crops in Kossuth County flattened

by: Roger Riley

Posted: Jul 6, 2022 / 05:50 PM CDT

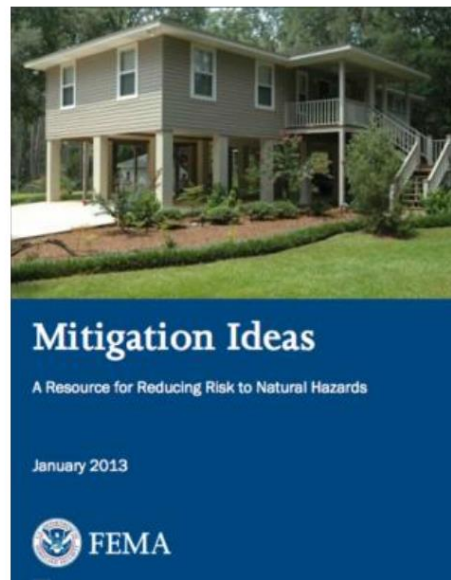
Updated: Jul 6, 2022 / 05:50 PM CDT



Identify New Mitigation Actions

— Add new mitigation actions:

- Projects needing FEMA Grant Assistance
- Review CIP, budgets, plans and studies
- Talk with staff



https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf



Identify New Mitigation Actions

— Consider actions that reduce risk:

- Life and human safety
- Existing buildings and infrastructure
- New development and redevelopment
- Community Lifelines



https://www.fema.gov/sites/default/files/2020-08/fema_mitigation-action-portfolio-support-document_08-01-2020_0.pdf



Identify New Mitigation Projects

— Mitigation Action Title: Short name for project

— Description: Project information. Provide location.

— Hazard: Project should solve a hazard listed in Hazard Prioritization.

— Estimated Cost: Best guess.

— Local Funding: Where will the funds come from?

Example Project

New Mitigation Action Title:	Backup Generator		
Description	A backup generator is needed at the city office.		
Hazard(s) Addressed	Tornado & Windstorm		
Estimated Cost	\$150,000		
Local Funding Source	City General Fund		
Timeline	1 Year	2-5 Years	5+ Years
Priority	High	Medium	Low
Have the capability to implement it at this time?	Yes	No	If no, why?
Lead Department/Position	Mayor		
Status	Not started		



Identify New Mitigation Projects

- Timeline: When will it be completed?
- Priority: Benefits vs. Costs (see next slide)
- Capability: Are there needed resources?
- Lead Department: Who will oversee the project?
- Status: Started? Waiting on funding? More data/study needed?

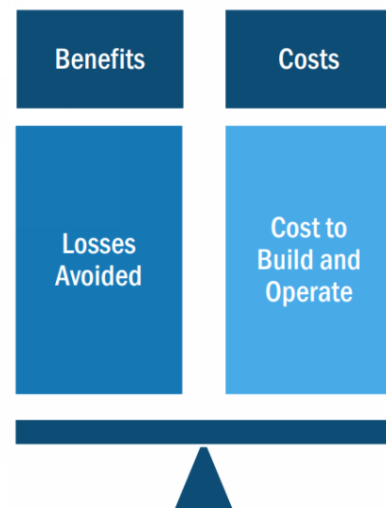
Example Project

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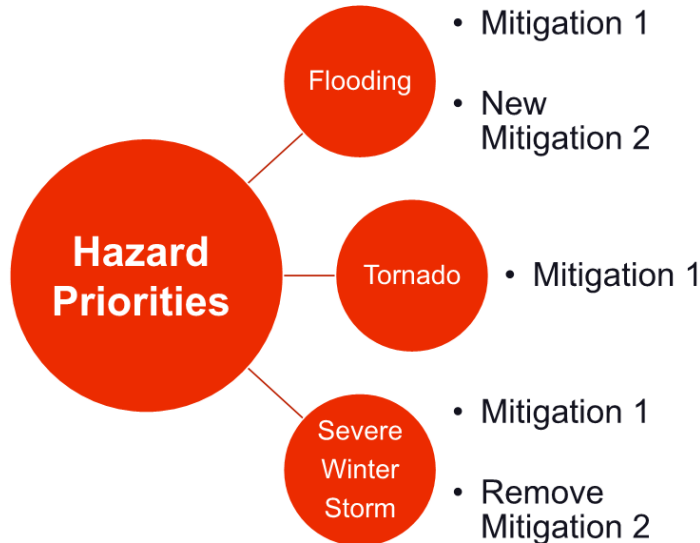
Prioritizing Projects: Benefits vs. Costs

- Anticipated Effectiveness
- Technical Feasibility
- Administrative Capabilities
- Political Will
- Legal Authority
- Environmental Constraints
- Social Considerations
- Community Objectives
- Benefits versus Costs



Complete Mitigation Strategy

Each prioritized hazard must have one mitigation action.



Plan Maintenance

HMPs should be reviewed and updated regularly.

- Who will be responsible for reviewing and updating the profile?
- How often will the profile be reviewed and updated?
- How will the public be involved?

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin, including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

For your jurisdiction, what positions are responsible for reviewing and updating the community profile outside of the five-year update?

Position: _____

Position: _____

Position: _____

Please indicate how frequently your jurisdiction intends to review/revise the profile. (circle one)

Every 6 months


Annually

Bi-annually

How will your jurisdiction notify and involve the public in the plan review and revision? (For example, social media, website updates, letters to all residents, board/council meetings, etc.)



Plan Integration Worksheet



Kossuth County
Hazard Mitigation Plan
Plan Integration Worksheet

JED Consulting Group
January 2024

Name(s): _____ Jurisdiction: _____

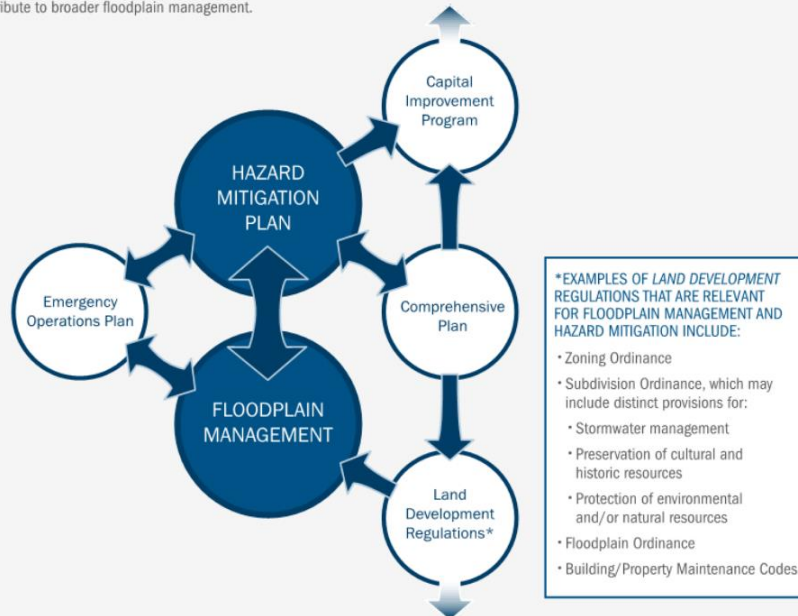
1

- County and Communities Only
 - School districts will have these questions in their profile.
- What planning documents does your jurisdiction have?
- Important that HMPs and planning documents are consistent
- Ask Floodplain Administrators, Clerks, Building & Zoning, and others for assistance



Integration of Common Planning Initiatives

The diagram below shows some of the basic relationships between common planning initiatives and illustrates how integration can contribute to broader floodplain management.



Plan Integration Worksheet

Step 1

Please complete the following table.

Which of these plans/ordinances does your jurisdiction have?

Plan/Ordinance	Yes/No	Year of most recent update
Comprehensive Plan		
Zoning Ordinance		
Subdivision Regulations		
Floodplain Regulations/Ordinance		
Building Code		What IRC Edition is Adopted?
Capital Improvements Plan		
Wellhead Protection Plan		
Water System Emergency Response Plan		
Community Wildfire Protection Plan		
Other:		
Other:		

For any additional plans your community has, e.g. Drought Management Plan, Evacuation Plan, Stormwater Management Plan, etc., please send JEO a copy.

Step 2

For the plans/ordinances which your community has, please complete the corresponding sections in this worksheet. Do not complete sections for plans/ordinances which your community does not have on record.

– Identify the plans and ordinances available for your jurisdiction (Page 3)

– Then complete **ONLY** the sections for plans/ordinances your jurisdiction has

– Any plans not covered, send a copy to JEO

– School Districts: SKIP (already included in profile)



Return Worksheets

– Due: Friday, February 9th

– Options to return completed draft profile worksheet:

– Email to Anthony Kohel: akohel@jeo.com

– Mail (Make a copy first)
JEO Consulting Group
Attn: Anthony Kohel
2000 Q Street, Suite 500
Lincoln, NE 68503



Next Steps

- Find others to help fill out worksheets
- Share with board/council
- Review draft during public review
- Adopt the plan by resolution
- Visit project website:
– <https://www.jeo.com/KossuthCountyHMP>



Project Schedule

- January 10:** Final meeting
- February 9:** Worksheets due
- March:** Public review and plan adoption
- April:** Submit plan to State and FEMA
- Summer:** Plan approved
- Fall 2024:** Finish plan adoptions

Current HMP expires: September 8, 2024



Project Contacts

- Kossuth County

- Charissa Mueller, (515) 295-5904, cmueller@kossuthcounty.iowa.gov

- JEO Consulting Group

- Becky Appleford, (402) 392-9915, rappleford@jeo.com

- Anthony Kohel, (402) 474-8753, akohel@jeo.com

Let us know you attended!

- In-Person

- Sign-in Sheet

- Online

- Message in the Chat



THANK YOU!



APPENDIX C WORKSHEETS TO ASSIST COMMUNITIES REVIEW AND UPDATE

Contents:

1. Worksheet #1: Progress Report
2. Worksheet #2: Evaluating Your Planning Team
3. Worksheet #3: Evaluate Your Project Results
4. Worksheet #4: Revisit Your Risk Assessment
5. Worksheet #5: Revise the Plan

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Plan Goal(s)/Objective(s) Addressed:

Goal: _____

Objective: _____

Indicator of Success (e.g., losses avoided as a result of the acquisition program):
In most cases, you will list losses avoided as the indicator. In cases where it is difficult to quantify the benefits in dollar amounts, you will use other indicators, such as the number of people who now know about mitigation or who are taking mitigation actions to reduce their vulnerability to hazards.

Status (Please check pertinent information and provide explanations for items with an asterisk. For completed or canceled projects, see Worksheet #2 — to complete a project evaluation):

<u>Project Status</u>	<u>Project Cost Status</u>
(1) <input type="checkbox"/> Project on schedule	(1) <input type="checkbox"/> Cost unchanged
(2) <input type="checkbox"/> Project completed	(2) <input type="checkbox"/> Cost overrun* *explain: _____
(3) <input type="checkbox"/> Project delayed* *explain: _____	(3) <input type="checkbox"/> Cost under run* *explain: _____
(4) <input type="checkbox"/> Project canceled	

Summary of progress on project for this report:

A. What was accomplished during this reporting period?

B. What obstacles, problems, or delays did you encounter, if any?

C. How was each problem resolved?

Next Steps: What is/are the next step(s) to be accomplished over the next reporting period?

Other comments:

Worksheet #2: Evaluating Your Planning Team

Worksheet #2: Evaluating Your Planning Team					
<p><i>When gearing up for the plan evaluation, the planning team should reassess its composition and ask the following questions:</i></p>					
<p>Have there been local staffing changes that would warrant inviting different members to the planning team? Comments/Proposed Action:</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%; padding: 5px;">YES</th> <th style="width: 50%; padding: 5px;">NO</th> </tr> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </table>	YES	NO		
YES	NO				
<p>Are there organizations that have been invaluable to the planning process or to project implementation that should be represented on the planning team? Comments/Proposed Action:</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </table>				
<p>Are there any representatives of essential organizations who have not fully participated in the planning and implementation of actions? If so, can someone else from this organization commit to the planning team? Comments/Proposed Action:</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </table>				
<p>Are there procedures (e.g., signing of MOAs, commenting on submitted progress reports, distributing meeting minutes, etc.) that can be done more efficiently? Comments/Proposed Action:</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </table>				
<p>Are there ways to gain more diverse and widespread cooperation? Comments/Proposed Action:</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </table>				
<p>Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning? Comments/Proposed Action:</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </table>				
<p>If the planning team determines the answer to any of these questions is "yes," some changes may be necessary.</p>					

Worksheet #3: Evaluate Your Project Results

Project Name and Number:

Project Budget:

Project Description:

Associated Goal and Objective (s):

Indicator of Success (e.g., losses avoided):

Insert location map

include before and after photos if appropriate

Was the action implemented?

IF YES

What were the results of the implemented action?

IF NO

Why not?

Was there political support for the action?	YES	NO
Were enough funds available?	YES	NO
Were workloads equitably or realistically distributed?	YES	NO
Was new information discovered about the risks or community that made implementation difficult or no longer sensible?	YES	NO
Was the estimated time of implementation reasonable?	YES	NO
Were sufficient resources (for example staff and technical assistance) available?	YES	NO

Were the outcomes as expected?
If No, please explain:

YES

NO

Additional comments or other outcomes:

Did the results achieve the goal and objective (s)?
Explain how:

YES

NO

Was the action cost-effective?	YES	NO
--------------------------------	-----	----

Explain how or how not:

What were the losses avoided after having completed the project?

If it was a structural project, how did it change the hazard profile?

Date _____

Prepared by: _____

Worksheet #4: Revisit Your Risk Assessment**Worksheet #4: Revisit Your Risk Assessment**

Risk Assessment Steps	Questions	YES	NO	COMMENTS
Identify hazards	Are there new hazards that can affect your community?			
Profile hazard events	Are new historical records available?			
	Are additional maps or new hazard studies available?			
	Have chances of future events (along with their magnitude, extent, etc.) changed?			
	Have recent and future development in the community been checked for their effect on hazard areas?			
Inventory assets	Have inventories of existing structures in hazard areas been updated?			
	Are future developments foreseen and accounted for in the inventories?			
	Are there any new special high-risk populations?			
Estimate losses	Have loss estimates been updated to account for recent changes?			

If you answered "Yes" to any of the above questions, review your data and update your risk assessment information accordingly

Worksheet #5: Revise the Plan

Worksheet #5: Revise the Plan	
Prepare to update the plan.	
When preparing to update the plan:	Check the box when addressed ✓
1. Gather information, including project evaluation worksheets, progress reports, studies, related plans, etc. Comments:	<input type="checkbox"/>
2. Reconvene the planning team, making changes to the team composition as necessary (see results from Worksheet #2). Comments:	<input type="checkbox"/>
Consider the results of the evaluation and new strategies for the future.	
When examining the community consider:	Check the box when addressed ✓
1. The results of the planning and outreach efforts. Comments:	<input type="checkbox"/>
2. The results of the mitigation efforts. Comments:	<input type="checkbox"/>
3. Shifts in development trends. Comments:	<input type="checkbox"/>
4. Areas affected by recent disasters. Comments:	<input type="checkbox"/>
5. The recent magnitude, location, and type of the most recent hazard or disaster. Comments:	<input type="checkbox"/>
6. New studies or technologies. Comments:	<input type="checkbox"/>
7. Changes in local, state, or federal laws, policies, plans, priorities, or funding. Comments:	<input type="checkbox"/>

8. Changes in the socioeconomic fabric of the community.

☐

Comments:

9. Other changing conditions.

☐

Comments:

Incorporate your findings into the plan.

When examining the plan:

Check the box when addressed ✓

1. Revisit the risk assessment.

☐

Comments:

2. Update your goals and strategies.

☐

Comments:

3. Recalculate benefit-cost analyses of projects to prioritize action items.

☐

Comments:

Use the following criteria to evaluate the plan:

Criteria

YES NO Solution

Are the goals still applicable?

--	--	--

Have any changes in the state or community made the goals obsolete or irrelevant?

--	--	--

Do existing actions need to be reprioritized for implementation?

--	--	--

Do the plan's priorities correspond with state priorities?

--	--	--

Can actions be implemented with available resources?

--	--	--

Comments:

Request to update hazard mitigation plan

REQUEST TO UPDATE LOCAL HAZARD MITIGATION PLAN – [COMMUNITY NAME]

[Date]

Iowa Dept Homeland Security & Emergency Management
7900 Hickman Rd, Suite 500
Windsor Heights, IA 50324
Jack.stinogel@iowa.gov

To Whom It May Concern:

The [COMMUNITY NAME] requests the following mitigation action(s) to be added to the [HMP NAME].
These action(s) will be added to *Section Seven: [COMMUNITY NAME] Participant Section*, pages XX-XX.

New Mitigation Action	[PROJECT NAME]
Description	
Hazard(s)	
Estimated Cost	
Funding	
Timeline	[1 YEAR/2-5 YEARS/5+ YEARS]
Priority	[HIGH/MEDIUM/LOW]
Lead Agency	
Status	[PLANNING STAGE/FUNDING OPTIONS/NOT STARTED/ETC]

Please send notification when the plan has been amended to [NAME@EMAIL.COM]. For questions,
please contact [LOCAL CONTACT FOR COMMUNITY] at XXX-XXX-XXXX or [NAME@EMAIL.COM].

Sincerely,

[COMMUNITY CONTACT NAME]

Cc: [Name for Copy]

[Name for Copy]

APPENDIX D

HAZARD MITIGATION PROJECT FUNDING GUIDEBOOK

Contents:

1. Overview
2. Federal Funding Resources
3. State of Iowa Funding Resources
4. Alternative Funding Resources

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Overview

The following Hazard Mitigation Project Funding Guidebook is intended to provide initial guidance on hazard mitigation project funding opportunities and where to find more information on grants. The information included is consistent with established processes for hazard mitigation planning. However, it is important to note the following in terms of the context for this guidebook relative to the overall planning process.

Project identification includes identifying all possible options (or alternatives) to address planning objectives; at this stage, all options are viable. At times, the best option may be to work with other stakeholders in the community to design solutions that are in line with community values while reducing risk (e.g., a bike path or ball field that can double as a retention area, or the preservation of an animal habitat that also serves as a natural buffer). These types of solutions can often be funded in very innovative ways, including solutions which increase local industry and revenue (e.g., tapping into the entrepreneurial community). For information on the broad range of mitigation project types and how projects have been implemented in communities across the country, please refer to FEMA's Mitigation Best Practices webpage at <https://www.fema.gov/mitigation-best-practices-portfolio>.

It should be noted that the grant programs listed in this guidebook are not the only ones that could support hazard mitigation project implementation. Additionally, many of these programs are dependent on yearly funding allocations, resulting in fluctuations in their fund availability. However, at this point, it is more important to be aware of the potential for various avenues of support for a broad array of project types. As needs and potential hazard mitigation project options are identified, more information can begin to be gathered on the range of programs which might be utilized. It will be more efficient to start with project options and then follow up with the identification of potential matches, working with the full range of available programs and agencies as part of a comprehensive project evaluation process.

When the current FEMA hazard mitigation planning program was formulated in the late 1990s as part of the Disaster Mitigation Act of 2000, there was an assumption that federal funding would be provided on a substantial, on-going basis for implementing hazard mitigation projects. However, the level of funding has varied from year to year and future prospects are unclear. Additionally, some communities have not been successful in their pursuit of these grants and have not seen the value of their investment in mitigation planning. While participation in a hazard mitigation plan is required for a jurisdiction to be eligible for FEMA funds, those are not the only funding source available for mitigation actions. Depending on the type of mitigation project being pursued, FEMA funding is not always the best option either, so it is increasingly important to look for other opportunities.

Opportunities for funding and technical assistance exist in various federal, state, and local agencies. Non-governmental funding opportunities are available at the regional or local level with private sector businesses, private foundations, and other non-governmental organizations (NGOs). In order to fully map out the range of local and state options, it is necessary to undertake a detailed stakeholder analysis – something which has not been done at this time. The following contains an overview of key federal and state programs that may include opportunities for hazard mitigation project funding, as well as additional information on suggested alternative funding routes.

Federal Funding Resources

Information about federal hazard mitigation project funding opportunities is organized by agency. Under each agency heading, applicable grant programs are listed with a description of the grant and, when available, information on typical funds available, eligibility, examples of past projects funded, and any additional relevant information. Agencies covered in this guidebook include:

- FEMA
- US Forest Service
- US Army Corps of Engineers
- US Bureau of Reclamation – WaterSMART
- US Department of Agriculture
- US Department of Agriculture Rural Development Funding
- US Department of Energy
- US Department of Housing and Urban Development
- US Economic Development Administration
- US Environmental Protection Agency
- US Fish and Wildlife Service

Note: This is not a complete list of all federal funding opportunities. These grant programs have been chosen for their applicability to popular mitigation actions. The websites and reference materials used to provide this information are as current as possible; however, it is important to note that funding programs are dynamic and subject to frequent changes. While it is helpful to be familiar with the current information, it is equally as important to engage candidate federal and state agencies in a dialog as soon as possible.

Federal Emergency Management Agency

Building Resilient Infrastructure and Communities Program	
Description	This FEMA program aims to focus on research-supported, proactive investment in community resilience. Through BRIC, FEMA invests in a variety of mitigation activities with an added focus on infrastructure projects benefitting disadvantaged communities, nature-based solutions, climate resilience and adaption, and adopting hazard resistant building codes.
Funds Available	For Fiscal Year 2022, FEMA will distribute up to \$2.295 billion through the BRIC program in the following manner.
Eligibility	Eligible states, territories and federally recognized tribal governments can submit applications on behalf of subapplicants for BRIC funding. Applicants may have their own priorities or requirements when screening their subapplications. Subapplicants cannot submit these directly to FEMA. Subapplicants must submit them to their applicant for review and submission. Subapplicants are local governments, including cities, townships, counties, special district governments, state agencies and federally recognized tribal governments and must submit subapplication to their state, territory, or tribal applicant agency.
Examples	The top five type of projects funded in Fiscal Year 2021 included Flood Control, Utility/Infrastructure Protection, Stabilization and Restoration, Mitigation Reconstruction, and Retrofits.
Additional Information	A cost share is required for all subapplications funded under BRIC. The non-federal cost share funding may consist of cash; donated or third-party in-kind services and materials; or any combination thereof. Generally, the cost share for this program is 75% federal cost share funding/25% non-federal cost share funding. Additional information can be found at https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities/before-apply#funding

Fire Management Assistance Grant (FMAG) Program	
Description	FMAG is available to states, local and tribal governments, for the mitigation, management, and control of fires on publicly or privately-owned forests or grasslands, which threaten such destruction as would constitute a major disaster.
Funds Available	The individual fire cost threshold is based on total eligible costs for the declared fire. The individual fire cost threshold for a state is the greater of \$100,000 or 5 percent times the statewide per capita indicator, multiplied

Fire Management Assistance Grant (FMAG) Program	
	by the state population (the statewide per capita indicator is adjusted annually for inflation [e.g., the FY21 indicator is \$1.55]).
Eligibility	Eligible applicants are entities legally responsible for the firefighting activities that reimbursement is being requested for, this includes states, local governments, and tribal governments.
Examples	Eligible firefighting costs may include expenses for field camps, repair and replacement tools, mobilization and demobilization activities, equipment use, materials and supplies.
Additional Information	https://www.fema.gov/assistance/public/fire-management-assistance

Flood Mitigation Assistance Program	
Description	FMA is a competitive program that provides funding for projects that reduce or eliminate the risk of repetitive flood damages to buildings insured by the National Flood Insurance Program. Projects must be cost effective, located in a participating NFIP community in good standing, align with the current hazard mitigation plan, and meet all environmental and historical preservation requirements.
Funds Available	Fiscal Year 2022 had \$800 million available for distribution which was more than five times the amount available for Fiscal Year 2021.
Eligibility	States, territories, and federally recognized tribes are eligible. Local governments are considered sub-applicants and must apply to the State, territory, or tribe.
Examples	Projects include: project scoping, technical assistance, community flood mitigation projects, individual structure/property-level flood mitigation projects, and management costs.
Additional Information	Cost share is required for all subapplications funded by the Flood Mitigation Assistance program. Generally, the cost share for this program is 75% federal / 25% non-federal. Contributions of cash, third-party in-kind services, materials, or any combination thereof, may be accepted as part of the non-federal cost share. More information can be found at https://www.fema.gov/grants/mitigation/floods

Hazard Mitigation Grant Program (HMGP)	
Description	FEMA's Hazard Mitigation Grant Program provides funding to state, local, tribal and territorial governments so they can develop hazard mitigation plans and rebuild in a way that reduces, or mitigates, future disaster losses in their communities. Funding is available when authorized under a Presidential major disaster declaration and in areas of the state requested by the Governor. Federally recognized tribes may also submit a request for a Presidential major disaster declaration within their impacted areas. All state, local, tribal and territorial governments must develop and adopt hazard mitigation plans to receive funding for their hazard mitigation projects.
Funds Available	Amount of funding is based on the estimated total or aggregate cost of disaster assistance: Up to 15% of the first \$2 billion; Up to 10% for amounts between \$2 billion and \$10 billion; Up to 7.5% for amounts between \$10 billion and \$35.333 billion; States with enhanced mitigation plans: Up to 20%, not to exceed \$35.333 billion.
Eligibility	Project eligibility under HMGP can be limited by the State as part of the HMGP Administrative Plan developed post-disaster. For example, funding may only be made available for projects that are related to the type of disaster, i.e., HMGP related to a significant flood disaster declaration may only be designated for flood mitigation projects like acquisitions of repetitively flooded properties.
Examples	Retrofitting existing buildings to make them less susceptible to damage from a variety of natural hazards. Purchasing hazard prone property to remove people and structures from harm's way. Drainage improvement projects to reduce potential for flood damage. Eligible project types do not have to coincide with the type of disaster declaration, as the state decides funding prioritization accordingly.
Additional Information	In this program, private homeowners and businesses cannot apply for a grant. However, a local community or other public entity may apply for funding on their behalf. Generally, the cost share is 75% federal and 25% non-federal funding. The 25% can come from any non-federal source, such as the state or local government, an individual, private contributions, Increased Cost of Compliance (ICC) funds from a flood insurance policy, or Small Business Administration loans. Additional information can be found at: https://www.fema.gov/grants/mitigation/hazard-mitigation/before-you-apply

HMGP-Post Fire	
Description	This program provides funding to help communities implement hazard mitigation measures focused on reducing the risk of harm from wildfire. Provides hazard mitigation grant funding to state, local, tribal, and territorial governments in areas receiving a Fire Management Assistance Grant (FMAG) declaration. The

HMGP-Post Fire	
	FMAG is the Disaster Declaration required and funding amounts are determined by FEMA based on an annual national aggregate calculation of the past 10 year's FMAG declarations.
Funds Available	Funds available each year are based on an average of historical Fire Management Assistance Grant declarations from the past 10 years. Total funding available for each FMAG declaration in Fiscal Year 2022 is \$786,552 for applicants with a standard hazard mitigation plans and \$1,048,736 for those with an enhanced hazard mitigation plan. Multiple event funding will be aggregated into one grant under the first declaration.
Eligibility	Eligible projects include defensible space initiatives, ignition-resistant construction, hazardous fuels reduction, erosion control measures, slope failure prevention measures and flash flooding prevention measures.
Examples	Defensible space, reducing hazardous fuels, removing standing burned trees, ignition-resistant construction, installing warning signs, strengthen or harden water systems that were burned and caused contamination, reseeding ground cover, planting grass to prevent noxious weeds, erosion barriers on slopes, modify/remove culverts, drainage dips and emergency spillways.
Additional Information	The application period opens with the state or territory's first FMAG declaration of the fiscal year and closes six months after the end of that fiscal year. Application extensions may be requested. https://www.fema.gov/grants/mitigation/post-fire

Pre-Disaster Mitigation (PDM)	
Description	The Pre-Disaster Mitigation grant program makes federal funds available to state, local, tribal, and territorial governments to plan for and implement sustainable cost-effective measures. These mitigation efforts are designed to reduce the risk to individuals and property from future natural hazards, while also reducing reliance on federal funding from future disasters.
Funds Available	On March 1, 2023, FEMA published a Notice of Funding Opportunity (NOFO) for FY23 Pre-Disaster Mitigation grant program. The total amount of funds that are being made available to 100 congressionally directed projects will be \$233,043,782. Applicants may request up to an additional 5% of project costs for management and administration of the program from a separate pool of funds.
Eligibility	Only states, territories, or federally recognized tribal governments identified by Congress in the Consolidated Appropriations Act and enumerated in the accompanying Joint Explanatory Statement for Division F are

Pre-Disaster Mitigation (PDM)	
	identified in this Notice of Funding Opportunity (NOFO) and are eligible to apply. All applicants and subapplicants must have a FEMA-approved Hazard Mitigation Plan by the application deadline
Examples	Storm Shelters, Wildfire Prevention Project, Bridge Rehabilitation, Drainage Improvements, Water Storage Tanks, Flood Mitigation Planning Projects, Evacuation Center, and more.
Additional Information	https://www.fema.gov/grants/mitigation/pre-disaster

Recovery and Resilience Resource Library	
Description	FEMA developed library to navigate the numerous programs available to the United States and its territories to help recover from a disaster. Tool helps users to find and research federal disaster recovery resources that would be beneficial to pre-disaster recovery planning or in the wake of a disaster.
Funds Available	Varies
Eligibility	Resources are intended for state, local, territorial, and tribal governments as well as non-profits, businesses, healthcare institutions, schools, individuals, and households.
Examples	Evidence-based or evidence-informed interventions to strengthen rural and urban communities.
Additional Information	https://www.fema.gov/emergency-managers/practitioners/recovery-resilience-resource-library

State and Local Cybersecurity Grant Program	
Description	Funding to help states, local governments, rural areas, and territories address cybersecurity risks and cybersecurity threats to information systems.

State and Local Cybersecurity Grant Program	
Funds Available	\$183.5 million is available under the SLCGP, with varying funding amounts allocated over four years from the Infrastructure Investment and Jobs Act. The recipient contribution can be cash (hard match) or third-party in-kind (soft match).
Eligibility	All U.S. states and territories are eligible to apply. The designated State Administrative Agency (SAA) for each state and territory is the only entity eligible to apply for SLCGP funding.
Examples	Planning, equipment, exercises, management & administration, organization, and training.
Additional Information	<p>This year, each state and territory will receive a funding allocation as determined by the statutory formula:</p> <ul style="list-style-type: none"> • Allocations for states and territories include a base funding level as defined for each entity: 1% for each state, the District of Columbia, and Puerto Rico; and 0.25% for American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and the U.S. Virgin Islands. • State allocations include additional funds based on a combination of state population and rural population totals. • 80% of total state allocations must support local entities, while 25% of the total state allocations must support rural entities; these amounts may overlap.

Safeguarding Tomorrow through Ongoing Risk Mitigation Revolving Loan Fund (STORM-RLF)	
Description	FEMA is making \$50 million available to fund capitalization grants that enable eligible entities to administer revolving loan funds and provide direct loans to local governments for projects and activities that mitigate the impacts of drought, intense heat, severe storms (including hurricanes, tornados, windstorms, cyclones, and severe winter storms), wildfires, floods, earthquakes, and other natural hazards. FEMA will work closely with participating entities and gather best practices on topics such as entity administrative burden and capacity, achieving resilience and equity goals, and common project and activity types for loans under this program. FEMA's goal is to increase entity participation with higher funding levels in future grant cycles.
Funds Available	FEMA intends to award \$472 million of the funds available under the new program to address climate change and create a more equitable and resilient nation.
Eligibility	Eligible entities are States, Federally recognized tribes that received a major disaster declaration, Territories, and the District of Columbia. State entities must enroll in this program for it to be an option to local public entities.

Safeguarding Tomorrow through Ongoing Risk Mitigation Revolving Loan Fund (STORM-RLF)	
Examples	This is an opportunity to prioritize low-impact development, wildland-urban interface management, conservation areas, reconnection of floodplain and open space projects. Funding can be utilized for building code adoption and enforcement. Allowable uses include: Mitigation Activities, Non-Federal Cost-Share, Local Government Technical Assistance, and Entity Administrative Costs.
Additional Information	Application period will be open starting February 1 - April 28, 2023. https://www.fema.gov/grants/mitigation/storm-rlf

U.S. Army Corps of Engineers

Planning Assistance to States	
Description	Provides assistance in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources. Typical studies are only planning level of detail, not design for project construction. Program can encompass many types of studies dealing with water resource issues. PAS program has two types of efforts-comprehensive plans and technical assistance: Comprehensive Plans and Technical Assistance. Comprehensive Plan Assistance includes planning for the development, utilization, and conservation of the water and related resources of drainage basins, watersheds, or ecosystems located within the boundaries of that State, including plans to comprehensively address water resources challenges such as the state water plan. Comprehensive plans can extend across state boundaries provided both States agree. Technical Assistance provided through the PAS program includes support of planning efforts related to the management of state water resources, including the provision and integration of hydrologic, economic, or environmental data and analysis in support of the State's water resources management and related land resources development plans identified in the state water plan or other water resources management related state planning documents, such as state hazard mitigation, preparedness, response, and recovery plans and plans associated with changing hydrologic conditions, climate change, long-term sustainability, and resilience.
Funds Available	<p>Comprehensive planning activities through the PAS program are cost shared (50 per cent) with the study partner, and voluntarily contributed funds in excess of cost share may be provided by the non-Federal partner. The non-Federal cost share for preparation of a state comprehensive water resources plan may be provided by funds or through the provision of services, materials, supplies, or other in-kind services.</p> <p>Technical assistance activities through the PAS program are cost shared (50 per cent) with the study partner, and voluntarily contributed funds in excess of cost share may be provided by the non-Federal partner. The cost-share for technical assistance must be provided by funds (not in-kind).</p>

Planning Assistance to States	
Eligibility	States, local governments, other non-Federal entities, and eligible Native American Indian tribes.
Examples	Types of studies in recent years include water supply/demand, water conservation, water quality, environmental/conservation, wetlands evaluation/restoration, dam safety/failure, flood damage reduction, coastal zone protection, and harbor planning.
Additional Information	https://www.nae.usace.army.mil/missions/public-services/planning-assistance-to-states/

U.S. Bureau of Reclamation

Small Scale Water Efficiency Projects	
Description	Funding for small-scale on-the-ground water management projects that conserve, better manage, or otherwise increase efficient use of water supplies. Projects supported by an existing water management and conservation plan, System Optimization Review, or other planning effort led by the applicant are prioritized.
Funds Available	Applicants may request up to \$100,000 in federal funding, with a non-federal cost-share of 50% or more of total project costs for projects with total project costs no more than \$225,000.
Eligibility	Eligible applicants for all WaterSMART Grants funding opportunities include states; tribes; irrigation districts; water districts; state, regional, or local authorities, whose members include one or more organization with water or power delivery authority; other organizations with water or power delivery authority; and nonprofit conservation organizations that are acting in partnership with and with the agreement of an entity previously described. To be eligible, applicants must be located in the Western United States or U.S. Territories. Entities located in Alaska and Hawaii are also eligible to apply.
Examples	Example projects include Canal lining/piping, municipal metering, irrigation flow measurement, SCADA and automation, landscape irrigation measures, high-efficiency indoor appliances and fixtures, commercial cooling systems.
Additional Information	https://www.usbr.gov/watersmart/swep/index.html

Water Marketing Strategy Grants	
Description	Financial assistance for the development of water marketing strategies to facilitate water markets as a tool for helping willing buyers and sellers meet water demands efficiently in times of shortage and prevent water conflicts.
Funds Available	Program funding is allocated through a competitive process. Applicants may request federal funding up to \$400,000 for projects to be completed within three years with a non-Federal cost share of 50% or more of the total project cost.
Eligibility	Eligible applicants for all WaterSMART Grants funding opportunities include states; tribes; irrigation districts; water districts; state, regional, or local authorities, whose members include one or more organization with water or power delivery authority; other organizations with water or power delivery authority; and nonprofit conservation organizations that are acting in partnership with and with the agreement of an entity previously described. To be eligible, applicants must be located in the Western United States or U.S. Territories. Entities located in Alaska and Hawaii are also eligible to apply.
Examples	Funding awarded under Water Marketing Strategy Grants can be used for outreach and partnership building, planning activities (e.g., hydrologic, economic, legal and other types of analysis), pilot activities, and the development of a “water marketing strategy” document.
Additional Information	https://www.usbr.gov/watersmart/watermarketing/index.html

Water and Energy Efficiency Grants	
Description	Focuses on projects that result in quantifiable and sustained water savings, including canal lining and piping projects, municipal metering projects, and Supervisory Control and Data Acquisition (SCADA) and automation projects.
Funds Available	Applicants may request federal funding: (I) up to \$500,000 for projects to be completed within two years, (II) up to \$2 million for projects to be completed within three years; and (III) up to \$5 million for projects to be completed within three years, with a non-Federal cost share of 50% or more of the total project cost. No more than \$5,000,000 in total WaterSMART Water and Energy Efficiency Grants funds will be awarded to any single applicant under this Funding Opportunity per fiscal year (i.e., an applicant may receive up to \$5.0M in FY 2023 funds).

Water and Energy Efficiency Grants	
Eligibility	Eligible applicants for all WaterSMART Grants funding opportunities include states; tribes; irrigation districts; water districts; state, regional, or local authorities, whose members include one or more organization with water or power delivery authority; other organizations with water or power delivery authority; and nonprofit conservation organizations that are acting in partnership with and with the agreement of an entity previously described. To be eligible, applicants must be located in the Western United States or U.S. Territories. Entities located in Alaska and Hawaii are also eligible to apply.
Examples	Projects conserve and use water more efficiently; increase the production of hydropower; mitigate conflict risk in areas at a high risk of future water conflict; and accomplish other benefits that contribute to water supply reliability in the western United States.
Additional Information	https://www.usbr.gov/watersmart/weeg/faq.html

U.S. Department of Agriculture

Conservation Innovation Grants (CIG)	
Description	Competitive program that supports the development of new tools, approaches, practices, and technologies to further natural resource conservation on private lands. Through creative problem solving and innovation, CIG partners work to address our nation's water quality, air quality, soil health and wildlife habitat challenges, all while improving agricultural operations. Public and private grantees develop the tools, technologies, and strategies to support next-generation conservation efforts on working lands and develop market-based solutions to resource challenges.
Funds Available	Applications made a CIG funding notice is announced each year. Funds for single- or multi-year projects, not to exceed three years, are awarded through a nationwide competitive grants process. Grantees must match the CIG investment at least one to one.
Eligibility	The natural resource concerns eligible for funding through CIG are identified in the funding announcement and may change annually to focus on new and emerging, high-priority natural resource concerns. National and State CIG – all non-Federal entities and individuals are eligible to apply. All CIG projects must involve EQIP-eligible producers.
Examples	Projects may be watershed-based, regional, multi-state or nationwide in scope.

Conservation Innovation Grants (CIG)	
Additional Information	https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/cig/

Emergency Watershed Protection Program	
Description	The EWP Program offers technical and financial assistance to help local communities relieve imminent threats to life and property caused by floods, fires, windstorms, and other natural disasters that impair a watershed. EWP does not require a disaster declaration by federal or state government officials for program assistance to begin.
Funds Available	NRCS may provide technical assistance as services and/or funds to plan, design, and contract the emergency measures, subject to an agreement between NRCS and the Sponsor. Installation/Construction costs are not to exceed 75% or 90% for limited resource areas. Engineering/Technical Assistance is not to exceed 100%. No funds are available for real property rights.
Eligibility	Project criteria requires the project to provide protection from flooding or soil erosion; reduce threats to life and property; restore the hydraulic capacity to the natural environment; and economically and environmentally defensible. Eligible local sponsors for recovery projects include cities, counties, towns, conservation districts, or any federally-recognized Native American tribe or tribal organization.
Examples	Removal of debris from stream channels, road culverts, and bridges; reshaping and protection of eroded streambanks; correction of damaged or destroyed drainage facilities; establishing vegetative cover on critically eroding lands; repair of levees and structures; repair of certain conservation practices; and purchase of floodplain easements.
Additional Information	https://www.nrcs.usda.gov/programs-initiatives/ewp-emergency-watershed-protection

Small Business Innovation Research	
Description	The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs at the U.S. Department of Agriculture (USDA) offer competitively awarded grants to qualified small businesses to support high quality research related to important scientific problems and opportunities in agriculture that could

Small Business Innovation Research	
	lead to significant public benefits. This program has two phases, Phase I is open to any small business concern that meets the SBIR/STTR eligibility requirements and Phase II is open only to previous Phase I awardees.
Funds Available	Funds are offered across 10 topic areas including: Forests and Related Resources, Plant Production and Protection-Biology, Animal Production and Protection, Conservation of Natural Resources, Food Science and Nutrition, Rural and Community Development, Aquaculture, Biofuels and Biobased Products, Small and Mid-size Farms, and Plant Production and Protection-Engineering
Eligibility	The SBIR/STTR programs do not make loans and do not award grants for the purpose of helping a business get established. The program seeks to stimulate technological innovation in the private sector, strengthen the role of small businesses in meeting federal research and development needs, increase private sector commercialization of innovations derived from USDA-supported research and development efforts, and foster and encourage participation by women-owned and socially and economically disadvantaged small business firms in technological innovations
Examples	Salary and wages for company employees, associated fringe benefits, materials and supplies, and a number of other direct costs needed to conduct the proposed R&D
Additional Information	https://www.nifa.usda.gov/grants/programs/small-business-innovation-research-technology-transfer-programs-sbirsttr

Watershed Rehabilitation Program	
Description	The Watershed Rehabilitation Program helps project sponsors rehabilitate aging dams that are reaching the end of their design life and/or no longer meet federal or state standards. NRCS provides technical and financial assistance to local project sponsors to rehabilitate aging dams that protect lives and property, and infrastructure.
Funds Available	Across the Nation, watershed REHAB projects provide over \$2.2 billion in reduced flooding and erosion damage while improving wildlife habitat, recreation, water quality and supply for an estimated 47 million people. Costs associated with additional or new water supply storage purposes added to the rehabilitation project may be cost-shared with watershed rehabilitation funds. Eligible project costs are covered 65% Federal/35% Local of total eligible project cost, not to exceed 100% of actual construction cost. No more than 100% of the engineering/Technical Assistance will be covered.

Watershed Rehabilitation Program	
Eligibility	Eligible projects are dams that were originally constructed through a NRCS Watershed Program, no longer meet current safety and performance standards, including dams past their evaluated life, and has current operation and maintenance.
Examples	Information not available
Additional Information	https://www.nrcs.usda.gov/programs-initiatives/watershed-rehabilitation

Watershed and Flood Prevention Operations Program	
Description	The WFPO program provides technical and financial assistance to help plan and implement authorized watershed projects for the purpose of flood prevention, watershed protection, public recreation, public fish and wildlife, agricultural water management, municipal and industrial water supply, water quality management, and watershed structure rehabilitation. The WFPO Program helps units of federal, state, local and tribal of government (project sponsors) protect and restore watersheds up to 250,000 acres.
Funds Available	The percentage of a project that will be covered by the federal cost-sharing varies by project purpose. Engineering and Technical Assistance is covered 100% for most project, except for Municipal and Industrial Water Supply projects. The percentage of installation/construction costs that are covered are as follows: Flood prevention-100%, Watershed Protection - Variable, Public Fish and Wildlife or Public Recreational Development - No more than 50%, Agricultural Water Management - Up to 75%, Municipal and Industrial Water Supply - no more than 50%, Water Quality Management - To be determined, Rehabilitation - No more than 100%.
Eligibility	Project criteria requires public sponsorship, be a watershed project of 250,000 acres or less, and have agricultural benefits that, including rural communities, must be 20% or more of the total benefits for the project. Eligible project sponsors include States, local governments, and tribal organizations.
Examples	Watershed Plans, flood prevention projects, drainage, irrigation, reservoir structure, dams.
Additional Information	https://www.nrcs.usda.gov/conservation-basics/conservation-by-state/iowa

U.S. Department of Agriculture Rural Development Funding

Community Facilities Loans and Grants	
Description	This program provides affordable funding to develop essential community facilities in rural areas, an essential community facility is defined as a facility that provides an essential service to the local community for the orderly development of the community in a primarily rural area, and does not include private, commercial, or business undertakings.
Funds Available	Information not available
Eligibility	Eligible for areas 20,000 or less in population. Applicants are municipalities, non-profits, special purpose districts, and federally recognized Indian tribes. Eligible borrowers include public bodies, community based non-profit corporations, and federally recognized tribes.
Examples	Funds can be used to purchase, construct, and/or improve essential community facilities, purchase equipment, and pay related project expenses
Additional Information	https://www.rd.usda.gov/programs-services/community-facilities/community-facilities-direct-loan-grant-program/ne

Community Facility Rural Community Development Initiative Grants	
Description	RCDI grants are awarded to help non-profit housing and community development organizations, low-income rural communities and federally recognized tribes support housing, community facilities, and community and economic development projects in rural areas. Funds may be used to improve housing, community facilities, and community and economic development projects in rural areas.
Funds Available	Grants are awarded with a minimum amount of \$50,000 and maximum of \$250,000. Funds are limited and are awarded through a competitive process. Matching fund requirement equal to amount of grant but in-kind contributions cannot be used as matching funds. Partnerships with other federal, state, local, private, and nonprofit entities are encouraged.
Eligibility	Open to public bodies, non-profit organizations, and qualified private organizations. Rural and rural areas other than a city or town with a population of greater than 50,000 people and the urbanized area contiguous and adjacent to such city or town.

Community Facility Rural Community Development Initiative Grants

Examples	RCDI grants may be used for but are not limited to training sub-grantees and providing technical assistance to sub-grantees on strategic plan developments, accessing alternative funding sources, board training, developing successful child care facilities, creating training tools, and effective fundraising techniques.
Additional Information	https://www.rd.usda.gov/programs-services/community-facilities/rural-community-development-initiative-grants#overview

Community Facility Technical Assistance and Training Grant

Description	Provide associations Technical Assistance and/or training with respect to essential community facilities programs. The Technical Assistance and/or training will help identify and plan for community facility needs that exist in the area. Once those needs have been identified, the Grantee can assist in identifying public and private resources to finance those identified community facility needs.
Funds Available	Maximum grant award of \$150,000. Grant funds are limited and are awarded through a competitive process. Matching funds are not required, in-kind contributions cannot be used as matching funds, partnerships with other entities are encouraged.
Eligibility	Open to public bodies, non-profit organizations, and federally recognized tribes. Rural areas including cities, villages, townships, towns, and Federally Recognized Tribal Lands outside the boundaries of a city of 20,000 or more.
Examples	Webster County purchased a new ambulance and equipment with Rural Development funds (and other sources) and South Sioux City was able to build a new fire station with funding from USDA Rural Development (and other sources).
Additional Information	https://www.rd.usda.gov/programs-services/community-facilities/community-facilities-technical-assistance-and-training-grant#overview

Emergency Community Water Assistance Grants (ECWAG)

Description	This program helps eligible communities prepare for, or recover from, an emergency that threatens the availability of safe, reliable drinking water. A federal disaster declaration is not required, and this grant covers
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Emergency Community Water Assistance Grants (ECWAG)	
	events such as drought or flood, earthquake, tornado or hurricane, disease outbreak, chemical spill, leak, or seepage, or other disasters.
Funds Available	Up to \$150,000 for water transmission line projects. Water Source grants up to \$1,000,000.
Eligibility	Primarily for residential purposes and are eligible for 10,000 or less population areas. Applicants are municipalities, special purpose districts (RWS), non-profits, and Recognized Indian Tribes. Applications are accepted year-round online through the RD Apply or through local RD office
Examples	Construction of waterline extensions, repair breaks or leaks in existing water distribution lines, and address related maintenance necessary to replenish the water supply. Water Source Grants are to construct a water source, intake, or treatment facility.
Additional Information	https://www.rd.usda.gov/programs-services/water-environmental-programs/emergency-community-water-assistance-grants/ne

U.S. Department of Energy

Grid Innovation Program	
Description	This program provides support for projects that use innovative approaches to transmission, storage, and distribution infrastructure to enhance grid resilience and reliability. Projects selected under this program will include interregional transmission projects, investments that accelerate interconnection of clean energy generation, and utilization of distribution grid assets to provide backup power and reduce transmission requirements. Innovative approaches can range from use of advanced technologies to innovative partnerships to the deployment of projects identified by innovative planning processes.
Funds Available	The Grid Innovation Program will invest up to \$5 billion (\$1 billion/year for Fiscal Years 2022-2026) in innovation and new approaches to transmission, distribution, storage, and regional resilience. The first funding cycle will include both FY22 and FY23, up to \$2 billion. Projects are subject to a 50% cost share minimum.
Eligibility	Eligible entities include a state, a combination of 2 or more states, an Indian Tribe, a unit of local government, or a public utility commission.
Examples	Transmission, storage, and distribution infrastructure to enhance grid resilience and reliability.

Grid Innovation Program	
Additional Information	

Grid Resilience Utility and Industry Grants	
Description	Grants provide funding to support activities that will modernize the electric grid to reduce impacts from extreme weather and natural disasters. This grant program will fund comprehensive transformational transmission and distribution technology solutions that will mitigate weather hazards across a region or within a community that can cause a disruption to the power system. Grants awarded under the program will fund transmission and distribution technology projects that seek to address hazards within a region or a community that can disrupt the power system, such as wildfires, floods or hurricanes.
Funds Available	Funding of \$2.5 Billion over five years from FY 22-26 with \$500 million available per year. Funding is capped at the amount the eligible entity has spent in the previous three years on hardening efforts. There is a 100% cost match for this program. The program includes a small utility set aside for those entities selling no more than 4 million MWh of electricity per year.
Eligibility	This funding opportunity is available to electric grid operators, electricity storage operators, electricity generators, transmission owners or operators, distribution providers, and fuel suppliers.
Examples	Infrastructure upgrades to strengthen and modernize the power grid against natural disasters that are exacerbated by the climate crisis.
Additional Information	https://www.energy.gov/gdo/grid-resilience-utility-and-industry-grants

Smart Grid Grants	
Description	Smart Grid Grants is designed to increase the flexibility, efficiency, and reliability of the electric power system, with particular focus on: increasing capacity of the transmission system, preventing faults that may lead to wildfires or other system disturbances, integrating renewable energy at the transmission and distribution levels, and facilitating the integration of increasing electrified vehicles, buildings, and other grid-edge devices. Smart

Smart Grid Grants	
	grid technologies funded and deployed at scale through this program must demonstrate a pathway to wider market adoption.
Funds Available	The Smart Grid Grant program will invest up to \$3 billion (\$600 million/year for Fiscal Years 2022-2026) in grid resilience technologies and solutions. The first funding cycle will include both FY22 and FY23, up to \$1.2 billion. Recipients must provide a cost-share of at least 50% of the grant.
Eligibility	This program is open to domestic entities including institutions of higher education; for-profit entities; non-profit entities; and state and local governmental entities, and tribal nations.
Examples	Grid enhancing technologies such as dynamic line rating, flow control devices, advanced conductors, and network topology optimization, to improve system efficiency and reliability. Investments in optical ground wire, dark fiber, operational fiber, and wireless broadband communications networks.
Additional Information	https://www.energy.gov/gdo/grid-innovation-program

U.S. Department of Housing and Urban Development

Community Development Block Grants	
Description	Provides annual grants on a formula basis to states, cities, and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons.
Funds Available	HUD determines the amount of each entitlement grantee's annual funding allocation by a statutory dual formula which uses several objective measures of community needs, including the extent of poverty, population.
Eligibility	Eligible grantees include principal cities of Metropolitan Statistical Areas, Other metropolitan cities with populations of at least 50,000, qualified urban counties with populations of at least 200,000 (excluding the population of entitled cities), States and insular areas. Eligibility for participation as an entitlement community is based on population data provided by Census. Each activity must meet one of the following national objectives for the program: benefit low- and moderate-income persons, prevention or elimination of slums or blight, or address community development needs having a particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community for which other funding is not available.

Community Development Block Grants	
Examples	CDBG funds may be used for activities which include, but are not limited to: Acquisition of real property; Relocation and demolition; Rehabilitation of residential and non-residential structures; Construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes; Public services, within certain limits; Activities relating to energy conservation and renewable energy resources; Provision of assistance to profit-motivated businesses to carry out economic development and job creation/retention activities
Additional Information	HUD does not provide CDBG assistance directly to individuals, businesses, nonprofit or organizations or other non-governmental entities. https://www.hud.gov/program_offices/comm_planning/cdbg

CDBG Disaster Recovery Assistance	
Description	The Community Development Block Grant (CDBG) Program has Disaster Recovery grants to rebuild the affected areas and provide crucial seed money to start the recovery process. These flexible grants help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations. Since CDBG Disaster Recovery (CDBG-DR) assistance may fund a broad range of recovery activities, HUD can help communities and neighborhoods that otherwise might not recover due to limited resources.
Funds Available	Varies according to the state plan outlined by the state department of economic development.
Eligibility	CDBG-DR funds are provided to the most impacted and distressed areas for Disaster Relief, Long-Term Recovery, Restoration of Infrastructure, Housing, and Economic Revitalization. HUD will notify eligible States, cities and counties if they are eligible to receive CDBG-DR grants. Those who receive grant money include state agencies, non-profit organizations, economic development agencies, citizens and businesses
Examples	Funding can be provided to cover unmet needs such as local cost share funding from public assistance projects or hazard mitigation grant projects.
Additional Information	https://www.hud.gov/program_offices/comm_planning/cdbg-dr

Neighborhood Stabilization Program	
Description	The Neighborhood Stabilization Program (NSP) was established for the purpose of providing emergency assistance to stabilize communities with high rates of abandoned and foreclosed homes, and to assist households whose annual incomes are up to 120 percent of the area median income (AMI). NSP funds were used for activities which included: Establish financing mechanisms for purchase and redevelopment of foreclosed homes and residential properties; Purchase and rehabilitate homes and residential properties abandoned or foreclosed; Establish land banks for foreclosed homes; Demolish blighted structures; Redevelop demolished or vacant properties.
Funds Available	\$4 billion nationwide. Iowa receives \$21.6 million in NSP funding
Eligibility	States, certain local governments, and other organizations.
Examples	The NSP provides grants to every state, certain local communities, and other organizations to purchase foreclosed or abandoned homes and to rehabilitate, resell, or redevelop these homes in order to stabilize neighborhoods and stem the decline of house values of neighboring homes.
Additional Information	https://www.hud.gov/program_offices/comm_planning/nsp

U.S. Economic Development Administration

Public Works and Economic Adjustment Assistance (EAA)	
Description	The EAA provides funding to help plan, build, innovate, and put people into quality jobs in hundreds of communities across the nation. The Economic Adjustment Assistance program is EDA's most flexible program, and grants made under this program will help hundreds of communities across the nation plan, build, innovate, and put people back to work through construction or non-construction projects designed to meet local needs.
Funds Available	Total Program Funding of \$500 Million with an award ceiling of \$10 Million and a floor of \$100,000.
Eligibility	A wide range of technical, planning, workforce development, entrepreneurship, and public works and infrastructure projects are eligible for funding under this program. Eligible applicants for EDA's Economic Adjustment Assistance program include a(n): District Organization of an EDA-designated Economic Development District; Indian Tribe or a consortium of Indian Tribes; State, county, city, or other political

Public Works and Economic Adjustment Assistance (EAA)	
	subdivision of a State, including a special purpose unit of a State or local government engaged in economic or infrastructure development activities, or a consortium of political subdivisions; Institution of higher education or a consortium of institutions of higher education; Public or private non-profit organization or association acting in cooperation with officials of a political subdivision of a State. Individuals or for-profit entities are not eligible.
Examples	Public infrastructure related to economic development.
Additional Information	As part of the \$300 million Coal Communities Commitment, EDA will allocate at least \$200 million of the Economic Adjustment Assistance funding to support coal communities.

U.S. Environmental Protection Agency

Clean Waters Act Section 319 Grants	
Description	Clean Water Act Section 319(h) funds are provided only to designated state and tribal agencies to implement their approved nonpoint source management programs. State and tribal nonpoint source programs include a variety of components, including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and regulatory programs.
Funds Available	Each year EPA awards Section 319(h) funds to states in accordance with a state-by-state allocation formula that EPA has developed in consultation with the states. Grant totals over the past 5 years have increased from \$155.9 million in 2013 and \$178 million in 2022.
Eligibility	Information not available
Examples	Information not available
Additional Information	https://www.epa.gov/sites/default/files/2015-09/documents/319-guidelines-fy14.pdf

Environmental Justice Collaborative Problem-Solving	
Description	This cooperative agreement program provides financial assistance to eligible organizations working on or planning to work on projects to address local environmental and/or public health issues in their communities. The program assists recipients in building collaborative partnerships with other stakeholders to develop

Environmental Justice Collaborative Problem-Solving	
	solutions that will significantly address environmental and/or public health issue(s) at the local level. Selected applicants, or recipients, are required to use the EPA's Environmental Justice Collaborative Problem Solving Model as part of their projects.
Funds Available	<p>The EJPCS Program anticipates awarding approximately \$30,000,000 of Inflation Reduction Act funding through 83 cooperative agreements, organized in two tracks of funding. \$25,000,000 for CBOs proposing projects for up to \$500,000 each. Approximately 50 awards for up to \$500,000 each are anticipated under this track. \$5,000,000 for qualifying small CBOs with 5 or fewer full-time employees proposing projects for up to \$150,000 each. For more details about this opportunity, please review closely the "Small Community-based Nonprofit Set Aside". Approximately 33 awards for up to \$150,000 each are anticipated under this track.</p> <p>Cooperative agreements will be funded for a three-year performance period.</p>
Eligibility	Eligible entities include incorporated non-profit organizations, US Territories, Tribal government, either federally or state recognized, tribal organizations, and freely associated states.
Examples	In 2003 the Pacific Basin Development Council received this grant to build community resiliency.
Additional Information	https://www.epa.gov/environmentaljustice/environmental-justice-collaborative-problem-solving-cooperative-agreement-5

Urban Waters Small Grants	
Description	The mission of this program is to help local residents and their organizations, particularly those in underserved communities, restore their urban waters in ways that also benefit community and economic revitalization. The program recognizes that healthy and accessible urban waters can help grow local businesses and enhance educational, recreational, social, and employment opportunities in nearby communities. Projects should meet the following four objectives: address local water quality issues related to urban runoff pollution; provide additional community benefits; actively engage underserved communities; and foster partnership.
Funds Available	Urban Waters Small Grants are competed and awarded every two years with individual award amounts of up to \$60,000.
Eligibility	Eligible applicants include States, local governments, Indian Tribes, public and private universities and colleges, public or private nonprofit institutions/organizations, intertribal consortia, and interstate agencies.

Urban Waters Small Grants	
Examples	An example of a past grant awarded was to the University of Nebraska-Lincoln in 2015-2016 to provide technical assistance and training on stormwater and green infrastructure to small businesses and residents of under-served communities.
Additional Information	https://www.epa.gov/urbanwaterspartners/urban-waters-small-grants

Water Infrastructure Finance and Innovation Act of 2014 (WIFIA)	
Description	The WIFIA program provides long-term, low-cost supplemental loans for regionally and nationally significant water and wastewater infrastructure projects. Borrowers benefit from a single fixed interest rate that is equal to the US Treasury rate of a similar maturity, an interest rate that is not impacted by the borrower's credit or loan structure, custom long-term repayment schedules with options to defer payment for up to 5 years.
Funds Available	\$20 million minimum project size for large communities, \$5 million minimum for small communities of 25,000 or less. WIFIA can fund a maximum of 49% of eligible project costs.
Eligibility	Eligible borrowers are 1) local, state, tribal, and federal government entities; 2) Partnerships and joint ventures; 3) Corporations and trusts; 4) Clean Water and Drinking Water State Revolving Fund (SRF) programs.
Examples	Wastewater conveyance and treatment projects. Drinking water treatment and distribution projects. Enhanced energy efficiency projects at drinking water and wastewater facilities.
Additional Information	Total federal assistance may not exceed 80% of a project's eligible costs. https://www.epa.gov/wifia/what-wifia

U.S. Fish and Wildlife Services

North American Wetlands Conservation Standard and Small Grant	
Description	A competitive matching grants program that supports public-private partnerships carrying out projects in the United States that further the goals of the North American Wetlands Conservation Act. These projects must involve long-term protection, restoration, and/or enhancement of wetlands and associated uplands habitat for the benefit of all wetlands-associated migratory birds.

North American Wetlands Conservation Standard and Small Grant	
Funds Available	US Small Grants may not exceed \$100,000 and require a 1-to-1 ratio match for awarded grant amount. The US Standard Grant is for grants larger than \$100,000 and requires a 1-to-1 match ratio.
Eligibility	US Small Grants proposals are due in October or else will be considered an early submission for the next Fiscal Year. The US Standard Grant has a two deadline for proposals, one in February and one in July. Proposal submitted after July are considered ineligible unless clearly marked as an early submission for the next Fiscal Year.
Examples	Acquisition of land for the purposes of wetlands conservation, wetland restoration projects, wetland enhancement projects, wetland establishment, or other direct long-term wetland conservation work.
Additional Information	https://www.fws.gov/sites/default/files/documents/north-american-wetlands-conservation-act-us-eligibility-criteria_0.pdf

U.S. Forest Service

Forestry Legacy Program	
Description	Focuses on private forest land that is faced by threats of conversion to non-forest land by urbanization, residential development. Providing economic incentives to landowners to keep forests as forest encourages sustainable forest management and supports strong markets for forest products. Landowners participate in the FLP by either selling property outright or by retaining ownership and selling only a portion of the property's development rights; both are held by state agencies or another unit of government. Use of a conservation easement allows land to remain in private ownership while ensuring that its environmental values are retained. Program funded by Land and Water Conservation Fund, which invests a small percentage of federal offshore drilling fees towards the conservation of important land, water, and recreation areas for all Americans.
Funds Available	Previous year funds for Fiscal Year 2022 totaled \$88,878,955 across 14 projects.
Eligibility	Private Lands
Examples	Funded projects from 2022 include the Montana Great Outdoors Conservation Project, Oregon's Spence Mountain Forest, Wyoming's Munger Mountain Corridor Initiative, and others.

Forestry Legacy Program	
Additional Information	https://www.fs.usda.gov/managing-land/private-land/forest-legacy/program

State of Iowa Funding Resources

In addition to federal grants, there are a number of state agencies and programs with potential applicability to supporting funding and implementation of mitigation projects. Many federal hazard mitigation grant programs are administered at the state level by HSEMD and IDNR, as noted above. These agencies will also likely be important in earlier stages of the hazard mitigation planning process by providing current hazard and risk assessment data.

While this section of the funding guidebook attempts to list as many funding options as possible, it is by no means a complete list of programs in Iowa that could have the potential to support hazard mitigation project implementation. Similar to federal grant programs, many of these programs are dependent on yearly funding allocations, which results in fluctuations in their availability. The websites and reference materials used to provide this information are as current as possible; however, it is important to note that funding programs are dynamic and subject to frequent changes. While it is helpful to be familiar with the current information, it is equally as important to engage candidate federal and state agencies as soon as possible.

Wellmark Foundation Grants	
Description	Must be classified as a Section 501(c)(3) tax-exempt organization under Internal Revenue Code or a governmental entity. If you have any questions related to eligibility, please contact Foundation staff by email at WellmarkFoundation@Wellmark.com or 515-376-6420. Must be an organization within the states of either 3 Iowa or South Dakota or seeking funding support for grant funding restricted for use in Iowa or South Dakota.
Funds Available	Built Environment MATCH Grant REQUESTS UP TO \$100,000 MATCH REQUIREMENT: Dollar-for-dollar, at least one-half of that amount must be cash.
Eligibility	
Examples	
Additional Information	TIMELINE: Applications must be submitted by late February. All applicants will be notified of funding decisions by May.

Iowa Department of Natural Resources Clean Water State Revolving Fund	
Description	Iowa's Clean Water State Revolving Fund (CWSRF) is the best choice to finance publicly owned wastewater treatment, sewer rehabilitation, replacement, and construction, and storm water quality improvements.
Funds Available	Since 1989, the CWSRF has provided more than \$1.4 billion in financing assistance for water pollution control.
Eligibility	
Examples	
Additional Information	http://www.iowasrf.com/program/clean_water_loan_program/clean-water-srf-intended-use-plan-information/

Derelict Building Program	
Description	The Derelict Building Program is available for Iowa towns of 5,000 or fewer residents' to address neglected commercial or public structures that have sat vacant for at least 6 months.
Funds Available	
Eligibility	To be eligible, the building must not reside on the National Historic Register. Only a City government may be an applicant and they must own or be in the process of owning the building. Applicants may partner with non-profits on projects, but building must be owned by applicant. The building must be a former commercial or public building that's been abandoned for at least six months.
Examples	
Additional Information	https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Waste-Planning-Recycling/Derelict-Building-Program

Iowa Silver Jackets	
Description	The Iowa Silver Jackets Program provides a formal and consistent strategy for an interagency approach to planning and implementing measures to reduce the risks associated with flooding and other natural hazards in the State of Iowa. Federal and state agencies are working together to enhance intergovernmental partnerships resulting in comprehensive and sustainable solutions to Iowa state flood risk hazards.
Funds Available	Varies
Eligibility	
Examples	
Additional Information	https://www.floodrisk.iowa.gov/

Alternative Funding Resources

In recent years, states and communities across the country have sought and developed innovative funding sources as alternatives to traditional government grant programs. These funding sources fall into three main categories: Local Funding Options, Public-Private Partnerships, and Private Foundations. These funding sources will be important for current and future hazard mitigation planning efforts for several reasons including:

- Decreases in funding for pre-disaster mitigation grant and assistance programs at the federal level and for state agencies - While technical assistance and other related support functions are still actively supported across federal and state agencies, and in some cases are increasing, allocations for “bricks and mortar” pre-disaster hazard mitigation projects will be competing with a broad range of government funding needs. These funds may not completely disappear, but the need will continue to outstrip the supply in the foreseeable future.
- Opportunities to fund projects that might not qualify or align with traditional grant and assistance programs. Funding programs seek solutions that reduce risk for a particular threshold (i.e., 1-percent flood) and meet absolute cost-benefit criteria that the agencies themselves must adhere to. Therefore, these programs, by their basic nature, are not able to support efforts that may help most of the time but don’t meet these thresholds, e.g., a homeowner installed flood wall in a repetitive loss area that prevents annual floods, but not larger magnitude events that come along every few years. There is a related concept that can be referred to as “cumulative risk reduction”. For example, a homeowner with limited resources (and no real access to grant funds) might be willing to spend a little time and money each year getting just a little bit safer.

Local Funding Options

Local funding options are just what they sound like, using local funds for local mitigation projects. Local funds are also needed as the non-federal share or “matching funds” for federal grant programs but can also be used independently to fund a range of project types. Local funding options include the following:

Capital Improvement Programs – Ongoing civic improvements can include prioritized hazard mitigation projects or mitigation can be included as one aspect of a larger project. For example, improving the hydraulic capacity of a culvert or bridge to prevent upstream flooding while undertaking periodic replacements for end of service considerations is one example. Replacing windows in a school with shatter resistant glass as part of an overall renovation is another example. Capital improvement programs are generally funded with local tax revenues and municipal bonds.

Permits, Fees, and Developer Contributions- Communities can establish fees, earmark a portion of existing permit and fee structures, and/or establish requirements for developer contributions

for new developments in hazard prone areas that can then be used to fund local mitigation projects. The proceeds can be accumulated in what is often referred to as a Mitigation Trust Fund and the uses are typically tied to specific project types and/or relationships with projects already identified in specific plans or documents such as an HMP. These types of funds can also be used to create vouchers or other incentives for individual action.

Force Account / In-Kind Services – Although there is a cost associated with activities of public employees, there are a wide range of activities that can be undertaken by local government staff and officials as well as interested parties on their behalf that would yield significant benefits. Some of the obvious examples are public outreach and education for individual property owners, businesses, and institutions to reduce their risk through correspondingly inexpensive or essential activities. This would include tapping into available education resources, promoting individual action, etc.

Property Owners – For a project that directly benefits one or more specific properties, the property owner can be asked to contribute. Through the HIRA process, property owners can become better aware of their risks and options. Owners that recognize they have a real flood problem may be willing to pay a portion of the cost. In recent years, property owners have voluntarily agreed to pay the non-federal share (up to 25 percent of the total project cost) for FEMA HMA grants in some states. In some cases, the owners have paid even higher percentages of the cost. In addition, after a flood, owners may have cash from insurance claims or disaster assistance that they will be using to repair their homes and properties. By including the right floodproofing and mitigation project components into the repairs, the resilience of the property to future flooding may be improved. Having property owners contribute to the project can help stretch available local funds and gives the property owner an enhanced stake in the outcome of the project and incentive to make sure the property is properly maintained.

Individual Participation – Although mitigation is ultimately intended to benefit individuals, HMPs often neglect to integrate participation of potential beneficiaries into the process. The participation by individuals, including small business owners, is important for making sure the resulting HMP reflects community needs and priorities, but it also allows for the planning team to identify measures and options that individuals can take to reduce their own risk at a cost they can afford.

Public-Private Partnerships

Developing a public-private partnership is a phrase used frequently in a wide range of government programs and for good reason, especially in the context of hazard mitigation. Participation of private sector organizations in solving their own hazard risk situations can be a low-cost and effective method. The phrase also encompasses finding opportunities for public and private sector partners to share costs equitably for larger projects that require substantial

funds to implement. Private sector businesses and organizations have their own cost-benefit calculations to perform but joint efforts may make the balance sheets work for both sides.

Private Foundations

Cultivating relationships with local, regional, or even national foundations with interests or missions consistent with hazard mitigation, community sustainability, climate change adaptation, and other related topics can yield successful results in terms of funding and other means of support.

There are many local foundations around the State of Iowa, many of which fund programs that can be utilized for components of hazard mitigation projects. Many of these foundations only support non-profit organizations, so the applicability of these funds to projects depends upon the partners involved.